Installation Manual & User Guide

Jet Thruster Single
Jet Thruster Combi

HOLLAND
MARINE PARTS

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Jet Thrusters Single

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Jet Thrusters Combi

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Preface:

Holland Marine Parts keeps you moving!

Thank you very much for your purchase of the Jet Thruster.

This electric system greatly simplifies the manoeuvring of your vessel!

The extensive development process of the Jet Thruster guarantees a complete and innovative system that will make operating your boat a breeze!

The Jet Thruster systems by Holland Marine Parts are made of quality materials. For the correct and safe operation of the Jet Thruster you have purchased, we recommend having it professionally installed. A professional installation taking into account the recommendations in this installation / user manual guarantees a well-working system.

This installation manual has been prepared with the utmost care. If you experience installation trouble please contact your Jet Thruster dealer. We point out that some vessels require adjustments to assure their integrity. For all your questions about this please contact your shipbuilder.

Holland Marine Parts

Warranty provisions

On all its newly manufactured products Holland Marine Parts provides quality assurance regarding their proper operation, both with regard to the material and the work done, including latent defects, for a period of 24 months after the invoice date to the first receiver.

In case of defects in material and/or defects caused by inadequate work done, as covered under warranty by Holland Marine Parts, the relevant part or the whole device will be either repaired or replaced at the discretion Holland Marine Parts, free of charge.

The warranty periods specified in the first paragraph are not extended by the implementation of repairs under warranty.

Any costs associated with travel, transportation and installation and/or disassembly with regard to repairs covered under warranty will be borne by the owner of that device.

Damage to the product caused by improper installation, by intentional or unintentional misuse, lack of maintenance, normal wear and/or repair by third parties without the written permission of Holland Marine Parts are not covered by warranty.

Holland Marine Parts shall under no circumstances be liable for any consequential damages of any nature whatsoever or howsoever caused by the part or the whole product covered by warranty by Holland Marine Parts.

Please note: Exclusion of warranty: The pump head of the pump unit and the gaskets on the 3-way valve are tested to be waterproof. If they are opened/removed/damaged this will void all liability towards Holland Marine Parts in the occurrence of damage as a result of these actions.

In this manual the installation of the JT-30, JT-50, JT-70 and JT-90 is explained. Choose the installation procedure that applies to the system you have purchased.

Safety: read this prior to installation or operation.

This installation manual provides advice about the complete installation of the Jet Thruster.
Remarks about safety are accompanied by this symbol.

Follow all instructions in this manual. All users of the system must be aware of the safety regulations as explained in this manual:

- Preferably leave installation and maintenance of the system to a dealer authorised by Holland Marine Parts.
- Use appropriate tools for the installation and maintenance of the Jet Thruster.
- Provide the Jet Thruster seperate battery(s). Place the battery(s) as close to the pump unit of the Jet Thruster as possible.
- Always use a Holland Marine Parts control panel.
- Do not touch any moving parts of an active system.
- Parts such as the E-motor may become hot: do not touch them and do not cover them under any circumstances.
- Avoid having flammable products near the E-motor.
- Do not conduct any inspection or maintenance of the system when it is active.
- Do not close any valves of an active system.
- The system is located beneath the water line. Do not remove any parts of the system before all valves have been closed.
- Close all valves when you are not aboard.
- Leave system maintenance to specialists.
- Disconnect the battery cables when conducting maintenance and in the event of long-term absence (e.g. when the vessel is not being used in winter).
- The hoses are under pressure in an active system: high-pressure hoses are to be attached to the vessel to prevent movement along e.g. sharp edges.
- Protect the high-pressure hoses from heat / penetration / sunlight / chemicals.
- Avoid physical contact with the water inlet when the system is active.
- Avoid physical contact (swimmers!) with the nozzles and the water expelled by an active system.
- Danger! Protect pump unit and 3-way valve from petrol fumes.
  Provide sufficient ventilation. Ignition proof covers are available.

Jet Thruster pump units

JT-30 66 thrust LBS 12V

Force	30 Kgf
Voltage DC	12V
E-motor capacity kW	3kW
Current	376A
Master fuse	425A
Recommended battery capacity 12V	1 x 105Ah
Battery cable +/-	1m -> 50mm² / 3ft -> 1/0 AWG
Max. operating time	4 min.
Water inlet	1 x Ø 90 mm/3½"
Water outlet	Nozzle Ø 32mm/1,26"
Pressure hose diameter	2" / 51 mm
Weight pump	29kg/64LB
Pump unit	**LxWxH: 442x425x330-340 mm** **lxwxh: 17.4x16.73x13-13.38 inch**
3-Way valve	**LxWxH: 240x160x189 mm** **LxWxH: 9.44x6.29x7.44 inch**

Nominal diameter	Major diameter	
	inch	mm
2" BSP ➡	2,34"	59,61
2,5" BSP ➡	3"	75,18
3" BSP ➡	3,½"	87,88

Note: Thread sizes of all Jet Thruster components in Whitworth Pipe Thread DIN ISO 228 BSP (DIN 259) British Standard Pipe.

JT-50 110 thrust LBS 12V

Force	50 Kgf
Voltage DC	12V
E-motor capacity kW	6kW
Current	730A
Master fuse	850A
Recommended battery capacity 12V	1 x 165Ah
Battery cable +/-	1m -> 70mm² / 3ft -> 2/0 AWG
Max. operating time	4 min.
Water inlet	1 x Ø 90 mm/3½"
Water outlet	Nozzle Ø 32mm/1,26"
Pressure hose diameter	2" / 51 mm
Weight pump	36 kg/80 LB
Pump unit	**LxWxH: 495,5x425x330-360 mm** **LxWxH: 19½x16.73x13-14.17 inch**
3-Way valve	**LxWxH: 240x160x189 mm** **LxWxH: 9.44x6.29x7.44 inch**

JT-50 110 thrust LBS 24V

Force	50 Kgf
Voltage DC	24V
E-motor capacity kW	6kW
Current	380A
Master fuse	425A
Recommended battery capacity 12V	2 x 105Ah
Battery cable +/-	1m -> 50mm² / 3ft -> 1/0 AWG
Max. operating time	4 min.
Water inlet	1 x Ø 90 mm/3½"
Water outlet	Nozzle Ø 32mm/1,26"
Pressure hose diameter	2" / 51 mm
Weight pump	34 kg/75 LB
Pump unit	**LxWxH: 495,5x425x330-360 mm** **LxWxH: 19½x16.73x13-14.17 inch**
3-Way valve	**LxWxH: 240x160x189 mm** **LxWxH: 9.44x6.29x7.44 inch**

JT-70 154 thrust LBS 24V

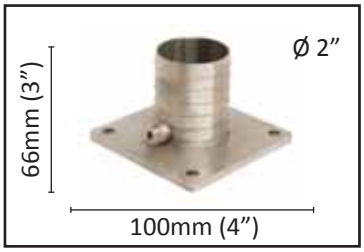
Force	70 Kgf
Voltage DC	24V
E-motor capacity kW	10kW
Current	550A
Master fuse	600A
Recommended battery capacity 12V	2 x 120Ah
Battery cable +/-	1m -> 70mm² / 3ft -> 2/0 AWG
Max. operating time	4 min.
Water inlet	1 x Ø 90 mm/3½"
Water outlet	Nozzle Ø 46mm/1,81"
Pressure hose diameter	3" / 76 mm
Weight pump	43 kg/95 LB
Pump unit	**LxWxH: 540x405x355 mm** **LxWxH: 21.25x15.95x14 inch**
3-Way valve	**LxWxH: 280x235x230 mm** **LxWxH: 11x9.25x9 inch**

JT-90 198 thrust LBS 24V

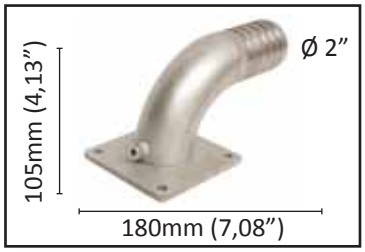
Force	90 Kgf
Voltage DC	24V
E-motor capacity kW	14kW
Current	770A
Master fuse	850A
Recommended battery capacity 12V	2 x 165Ah
Battery cable +/-	1m -> 70mm² / 3ft -> 2/0 AWG
Max. operating time	4 min.
Water inlet	2 x Ø 90 mm/3½"
Water outlet	Nozzle Ø 46mm/1,81"
Pressure hose diameter	3" / 76 mm
Weight pump	49 kg/130 LB
Pump unit	**LxWxH: 675x381x365 mm** **LxWxH: 26.57x15x14.37 inch**
3-Way valve	**LxWxH: 280x235x230 mm** **LxWxH: 11x9.25x9 inch**

Technical Specifications JT-30

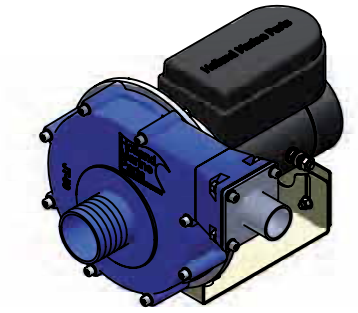
• Sizes stipulated in milimeters.

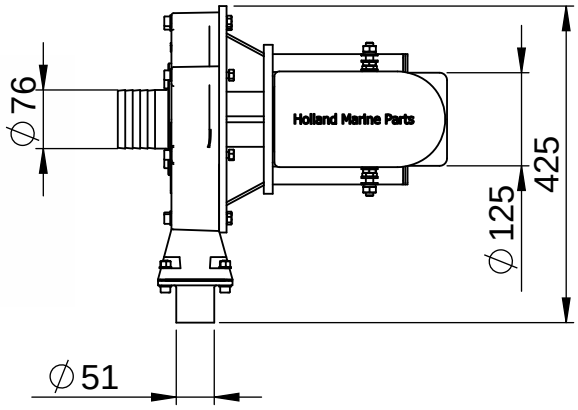


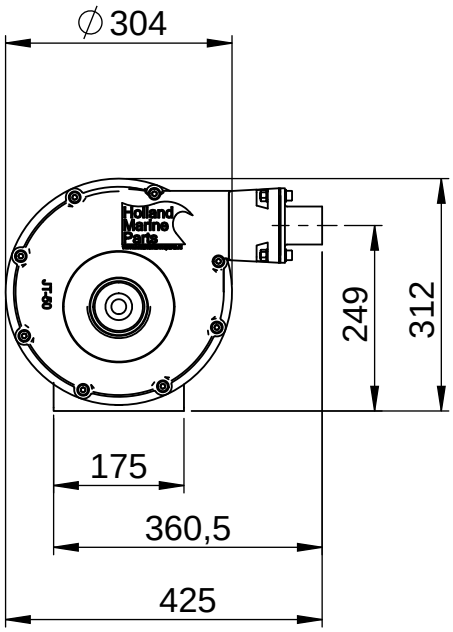
Straight pump outlet

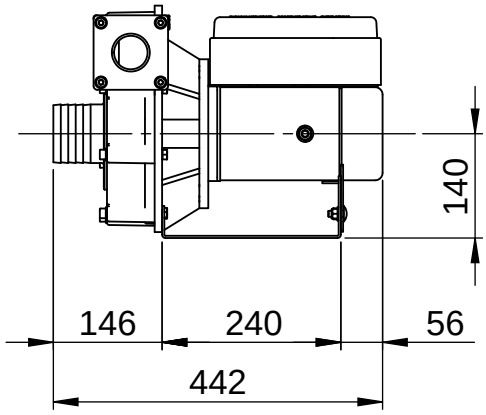


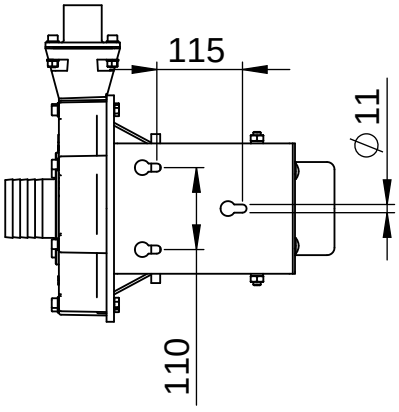
90⁰ pump outlet

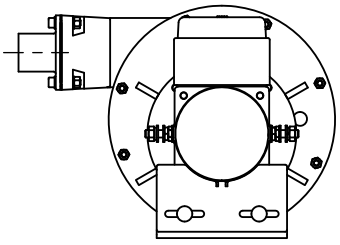











Different pump head positions possible

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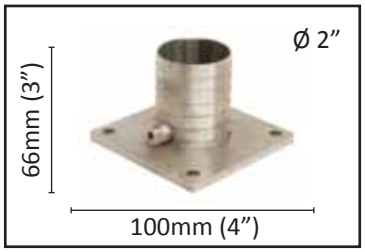
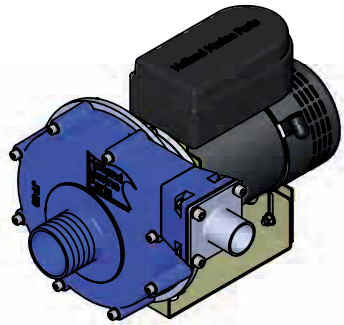
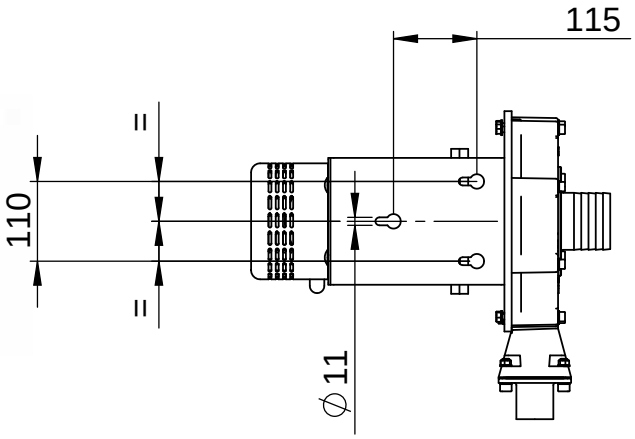
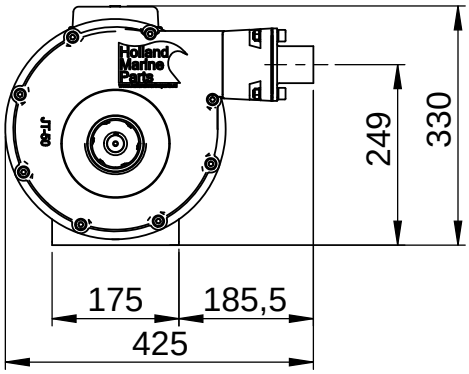


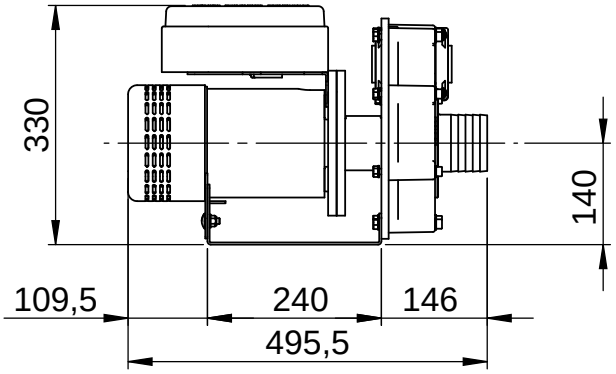
Straight pump outlet

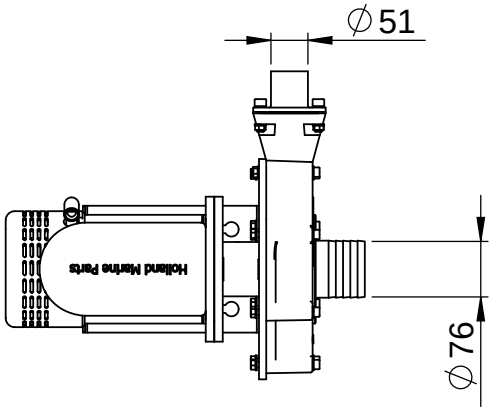
90⁰ pump outlet

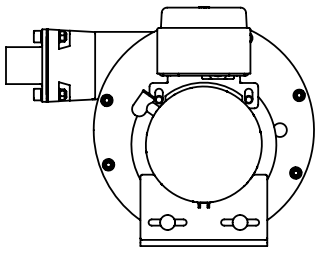










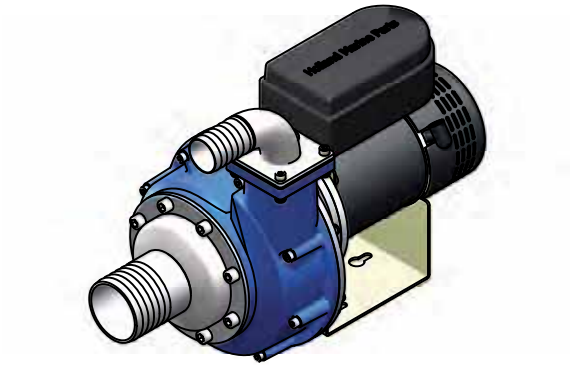


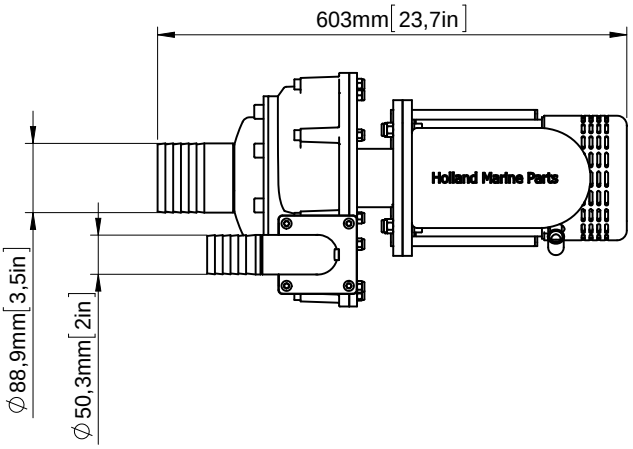
Different pump head positions possible

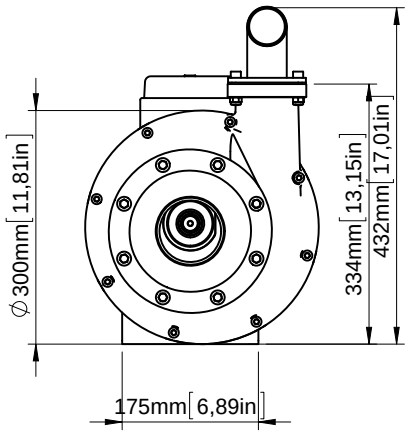
Technical Specifications JT-70

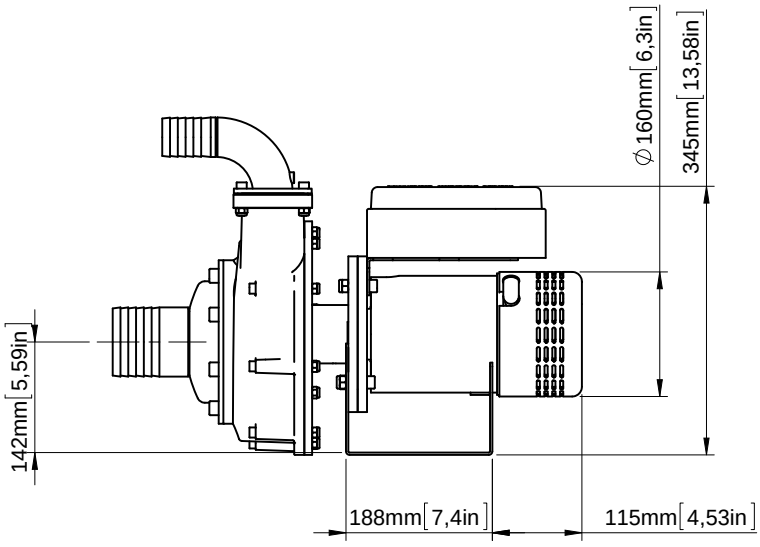
Straight pump outlet

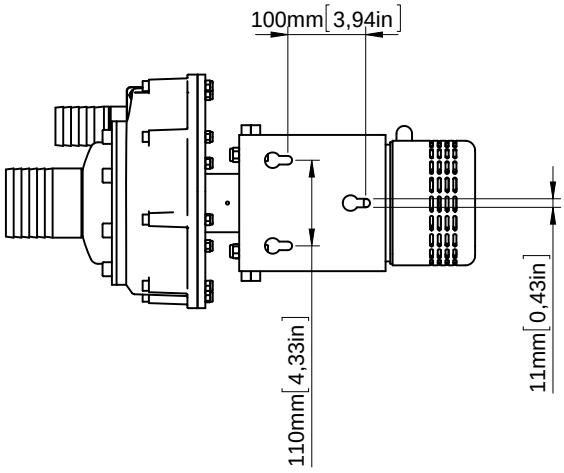
90⁰ pump outlet

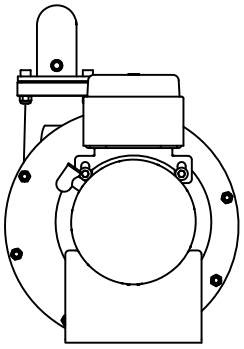






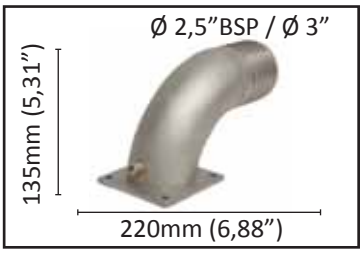




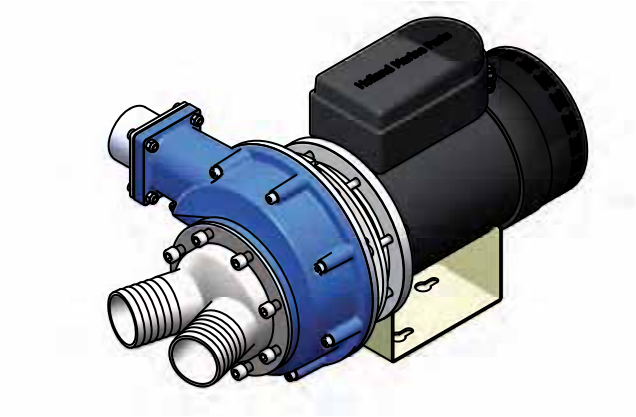

Different pump head positions possible

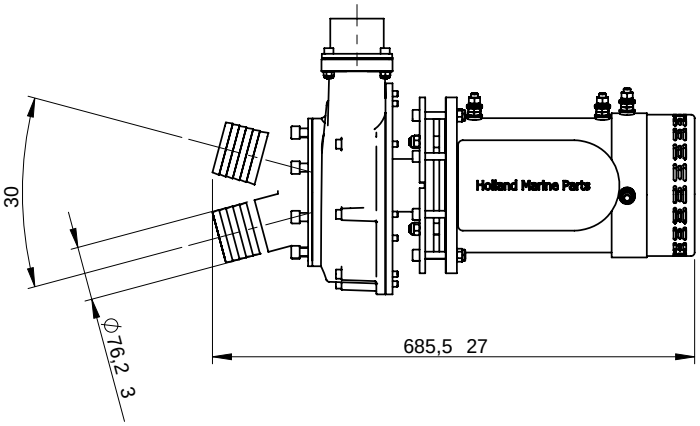
Technical Specifications JT-90

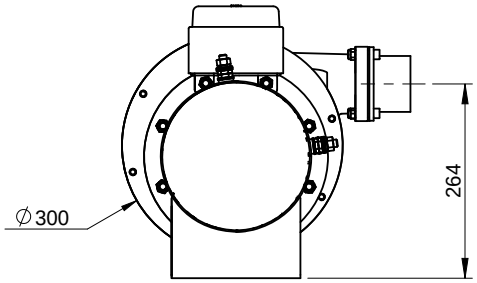
Straight pump outlet

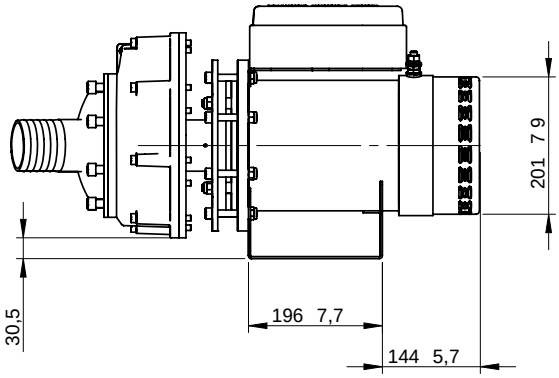


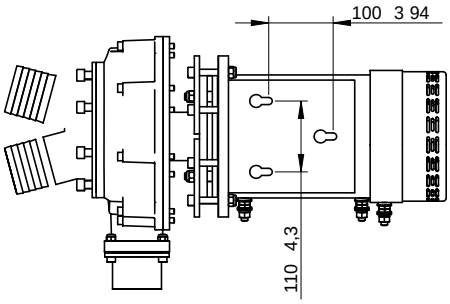
90⁰ pump outlet

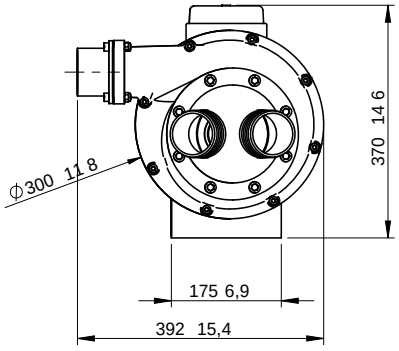






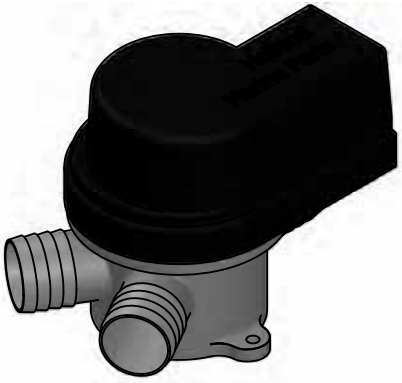


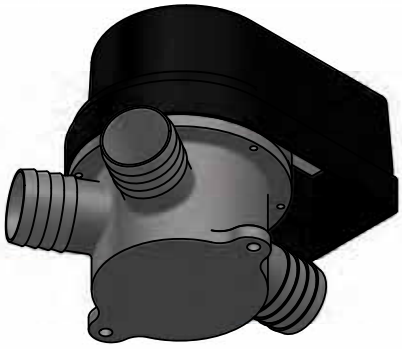


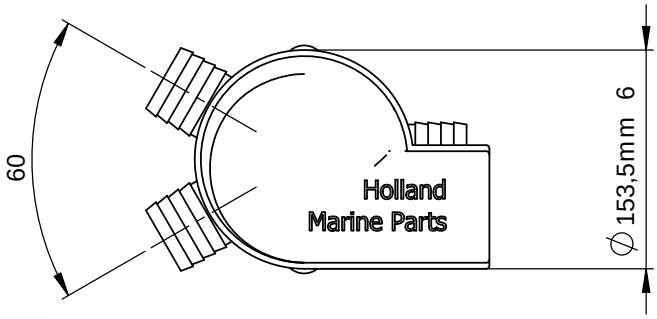


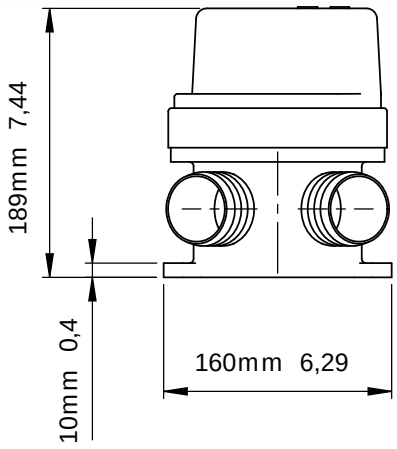
Different pump head positions possible

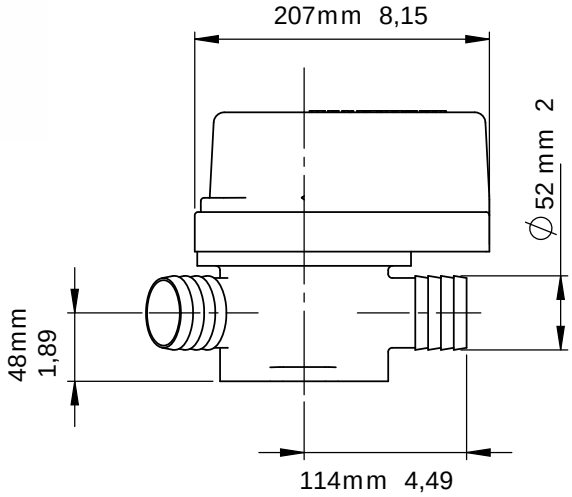
Technical Specifications 3-way valve JT-30 / JT-50

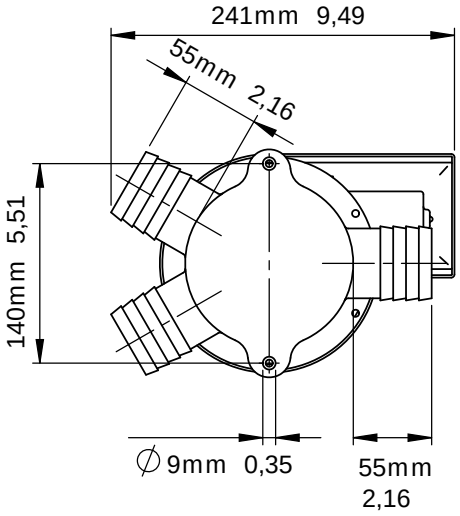


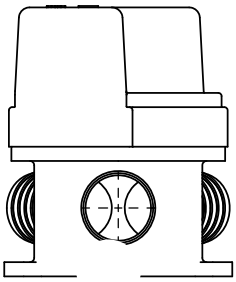




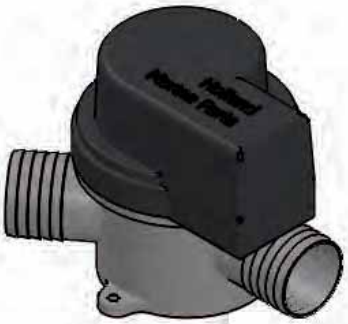


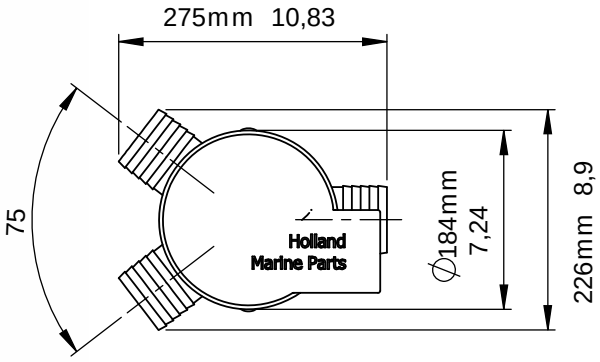


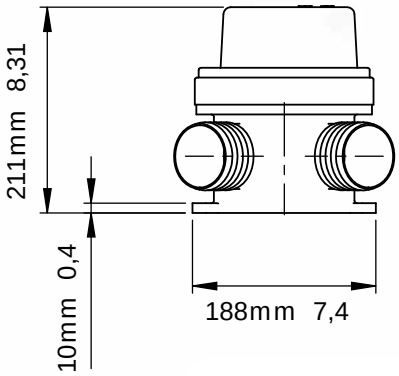


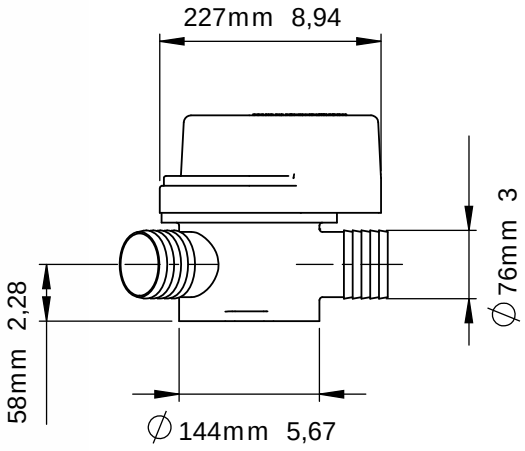


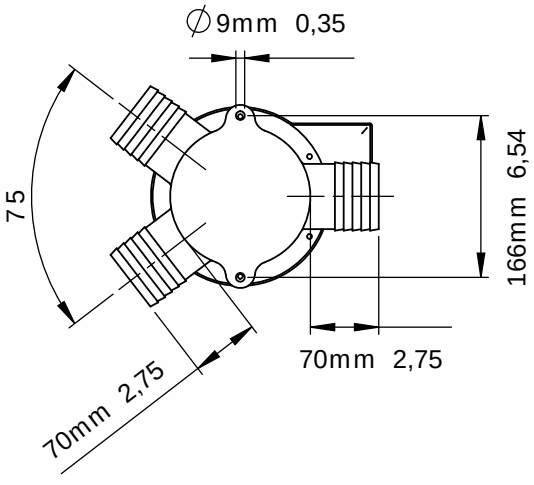
Technical Specifications 3-way valve JT-70 / JT-90

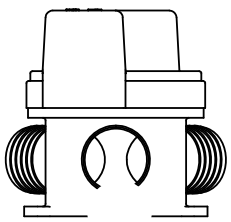












Installing the Jet Thruster Single:

All orifices are located below the water line. Extra attention needs to be given to securing and installing the included hose clamps around the high-pressure hoses. The included hose clamps are robust and of high quality.

Holland Marine Parts recommends using the included hose clamps. The installation of different hose clamps than the ones included with the system is at your own risk.

Mechanical Installation:

See page 36 - 51 for a schematic view

Keep the following points in mind during the mechanical installation:

A: position of pump unit and water inlet combination (see page 15)

B: position of 3-way valve (see page 17)

C: position of nozzles (see page 18-21)

Note: The Jet Thruster is most efficient when the connections between system components made with the included high-pressure hoses are as short as possible. Place the pump unit and the 3-way valve as close to the nozzles as possible to achieve this.

Hose clamps:

Installation kit provides 1 hose clamp per bushing.

Pay attention when installing the provided Müllenbach two-shell hose clamps:

Make sure all parts of the clamp slide into place when tightening the nuts.
Make sure clamps are well placed and thoroughly fastened.
To avoid corrosion, apply e.g. Protective spray to the clamp.
After first operation of the system, check that clamps are tight.
Annually inspect the clamps for their integrity.

A: Position of pump unit and water inlet combination

I-302-00
Water inlet SS 316

Please note: *Pump head must be under water line.*

- Place the water inlet in the hull of the vessel. Diameter in hull 90mm (3½" hole saw)
- Exterior of hull: Flange of inlet piece (I-302-00)
- Interior of hull: sealing rubber (I-306-00), PP sliding ring (I-303-00), nut 3" (I-304-00)

Please note: *Keep a maximum distance of 1 metre (3,3 ft) between the bushing of the pump and bushing 2½" on the ball valve side. 1 metre (3,3 ft) hose is provided for this purpose (I-312-00)*

Please note: *Exterior of hull: Flange provided with polymer sealing kit. The included rubber sealing ring (I-306-00) can be used in combination with the polymer kit in case of completely flat plating. Mortising is preferable.*

See Exploded views in this manual for correct installation order of all components.

Danger!: Protect pump unit and 3-way valve(s) from petrol fumes! Provide sufficient ventilation.
Ignition proof covers are available for JT-30 / JT-50 Vertical.

Standard configuration: 90^0 degree elbow 3" BSP SS 316, provided in installation kit.

Option in case of steep hull or problems with alignment:

SS 316

Available as option:
Female / Female 3" BSP 45^0 elbow: I-354-00
Male / Female 3" BSP 45^0 elbow: I-364-00
Can be ordered additionally

To avoid resonance:

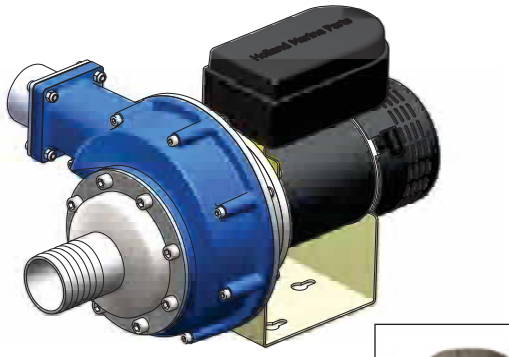
- Do not bring pump unit into contact with the interior.

- The engine must be attached to the vessel by means of the engine bracket. To do this, use the three recesses in the engine bracket: m8 (5/16)

Lateral placement:

For lateral placement attach a hose socket with square mounting plate + rubber seal to the pump head.

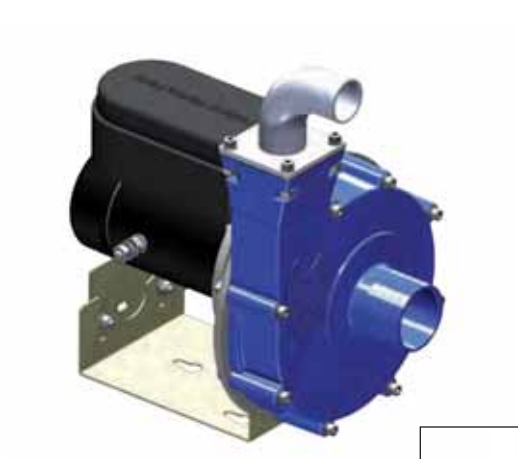
2” / 51 mm



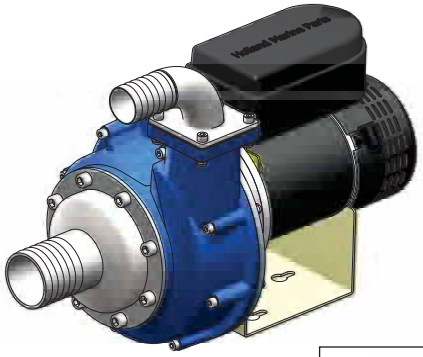
3” / 76 mm

Longitudinal placement:

For longitudinal placement attach the elbow 90° hose socket with square mounting plate + rubber seal to the pump head.



2” / 51 mm



3” / 76 mm

B: Position of 3-way valve

CAUTION: Prevent physical injury. When electrically turning the plunger present in the valve body, considerable force occurs. Prevent any body parts from getting trapped during installation.

Please note: By opening the valve, the watertight seal and bearing is broken.
Opening the valve will void your warranty.

- Place of the 3-way valve as close to the nozzles as possible.
- Mount the 3-way valve to the vessel. Use the recesses at the bottom of the valve body for this. (m8) Possition not necessary horizontal.
- Allways use the protective cover to protect the electricalparts.

- **See page 22-24 for the Jet Thruster Single electrical installation.**
- **See page 27-28 for the Jet Thruster Combi electrical installation.**

Jet Thruster Combi:
Dirt that builds up in the system, will be flushed out during use. The function of the 3-way valve allows for an amount of water flowing through, even when the valve is not in use. In a system that is in operation, water flowing out will be observed in all of the nozzles. This is normal and indicates that the system is functioning correctly.

V-200-00

C: Position of the nozzles

- Based on the type of hull you have chosen a certain nozzle type. Select this nozzle type and the corresponding installation instructions from the below scheme.

Please note: Nozzles are equipped with an internal Venturi. Do not damage or remove this constriction!

Weldable	Part number	Diameter	Finishing
Steel	I-318-00	65 mm (2,59”)	cut off remaining length
SS316	I-320-00	60 mm (2,36”)	cut off remaining length
Aluminium	I-322-00	60 mm (2,36”)	cut off remaining length

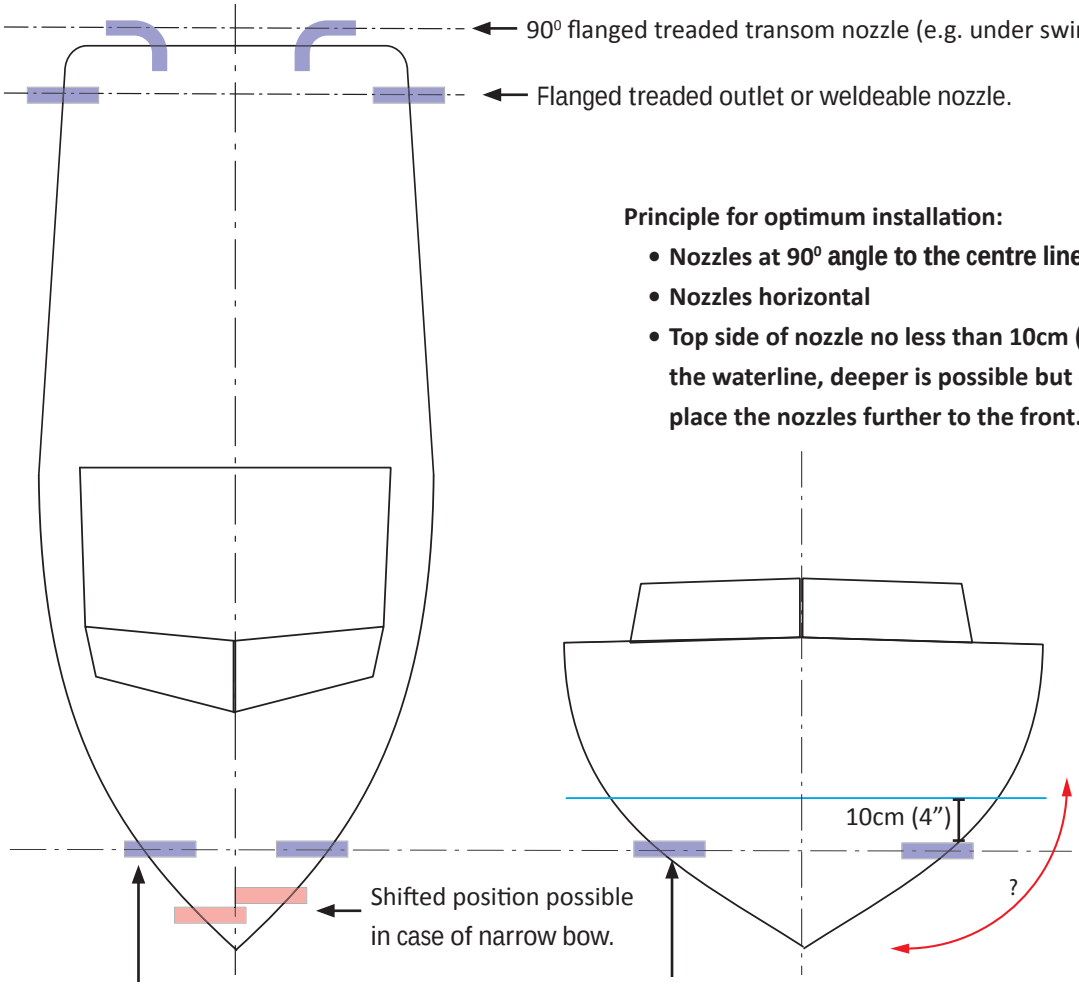
Flange threaded (SS316)	Part number	Diameter	Finishing
0^0	I-324-00	60 mm (2,36”)	no finishing needed
25^0	I-330-00	60 mm (2,36”)	no finishing needed
35^0	I-333-00	60 mm (2,36”)	no finishing needed
45^0	I-336-00	60 mm (2,36”)	no finishing needed
55^0	I-339-00	60 mm (2,36”)	no finishing needed
Flange threaded 90^0 transom	I-342-00	60 mm (2,36”)	no finishing needed

nozzle 0^0 | nozzle 25^0 | nozzle 35^0 | nozzle 45^0 | nozzle 55^0

transom 90^0 | nozzle aluminium | nozzle SS316 | nozzle steel

- The Jet Thruster will be most effective when the nozzles are placed AS FAR AS POSSIBLE TO THE BOW. (shifted position possible as seen in diagram, to increase leverage arm).
- Top side of nozzle 10cm (4”) below waterline.
- Keep in mind that when the nozzles rise above the waterline , it is possible by the powerful Jet of water expelled by the Jet Thruster inconvenience or damage may occur.
- **Theoretically:** After correct installation one can look through the nozzles from port to starboard. Use the included 45 degree elbows in order to place the nozzles as far as possible to the front.

In case of application as a stern Jet or in case of Jet Thruster Combi: place the system as far as possible to the stern.
If 90^0 Transom nozzles are installed in the stern, the system will be most efficient.


90⁰ flanged treaded transom nozzle (e.g. under swiming platform).
Flanged treaded outlet or weldeable nozzle.
Shifted position possible
in case of narrow bow.
10cm (4”)
?

Principle for optimum installation:

- **Nozzles at 90^0 angle to the centre line of the vessel**
- **Nozzles horizontal**
- **Top side of nozzle no less than 10cm (4”) below the waterline, deeper is possible but consider to place the nozzles further to the front.**

In case of a blund bow, concider an increased nozzle angle.
Nozzle can be rotated to achieve optimum position.

Choose the correct nozzle angle 0^0, 25^0, 35^0, 45^0, 55^0

Illustration of shifted and crossed nozzle position.

Venturi in nozzle; do not damage

Installing the nozzles and water intake.

In case of steel or aluminum vessel plating weldable nozzles are available.
For polyester and wooden vessel plating flange treaded nozzles are available.

1: Place vessel horizontal. Select optimum position for nozzle: As far to the front of bow or stern as possible, top side of nozzle 10cm / 4" below water line. Nozzle horizontal and in 90˚ angle to the heart line of the vessel.

Note: Not placing the nozzles as far to the front or aft as possible reduces the overall effectiveness of the system!

Laser equipment can assist selecting optimum position and determine if vessel is placed perfectly horizontal.

2: Make sure the position of both nozzles and the components like the ball valves, elbows, hose connector, hoses and hose clamp are not in conflict with available space before a hole is made.

Drill a pilot hole. Keep drill horizontal!

Nozzles can be positioned shifted horizontal and vertical in case of a narrow bow. Hoses can be crossed in order to place the nozzles further to the front of the bow. See image at point 8 for visible explanation.

3-4: Use a 60mm / 2⅜" hole saw to drill the holes for the nozzle.
Keep drill horizontal and in 90˚ position to the vessel's heart line. (see illustration page 19)

5: Smoothen edges

6: Fit in the nozzle and check if nozzle is placed horizontal and in 90˚ angle to the heart line of the vessel e.g. by inserting the nozzle from the inside out to determine if hole is drilled correct.

7: Outside of vessel:

Weldable nozzle: Weld in the nozzle and cut of remaining length. Smoothen surface. Note: Do not cut into, or cut away the internal restriction within the nozzle!

Flange treaded nozzle: In case of an rough or not entire flat surface: Apply sealant for maritime purposes: Sikaflex-291i / 3M 5200 adhesive / sealant on the side of the flange of the nozzle that contacts the vessel plating.

In case of a smooth and flat surface: Apply the provided rubber packing to seal. Do not use additional sealant in combination with the rubber gasket.

Inside vessel:

Place the PVC guide ring, white nylon ring and the 2" nut, apply sealant. Tightly fasten the nut. Make sure the nozzle remains horizontal and in 90˚ heart line of the vessel.

8: Connect the ball valve, 45˚ elbow and the hose connector. All connections are BSP treaded. Apply Sealant for maritime purposes: e.g. Sikaflex-291i / 3M 5200 adhesive / sealant at every tread to connect and seal the parts.

9: Thoroughly clean and degrease every tread that has to be connected. Make sure to use sufficient sealant on the tread. At least 6 threads and smoothen with e.g. finger over entire thread. Apply sealant on both parts that have to be installed. Remove spilled sealant immediately. Use acetone to remove Sikaflex-291i stains.

10: Installing the water intake: The position of the pump unit that has to be installed under the water line determines the location of the water intake. Make sure the position of the water intake and the components like the ball valve, elbow, hose connector, hoses and hose clamp are not in conflict with available space before a hole is made.
Drill a 90mm (3½") hole, smoothen edges.

11: Repeat installation process like suggested at point 7.

12: Thoroughly secure the flange treaded water intake by fasten the provided 3" nut.

Electrical Installation: Jet Thruster Single

Schematic diagram in appendix A-1, A-2, A-3, B-1 and C-1

The electrical installation of the Jet Thruster is very simple. In **appendix A-1, A-2, A-3, B-1 and C-1** you will find the schematic diagram of the wiring to be applied.

The electric motor of the Jet Thruster generates a lot of power in a short period of time. It is recommended you connect a separate battery to the system. It is preferable to make the connection between this battery and the system as short as possible. Use appropriate battery cables and connecting material for this at all times.

The system must be equipped with the included main fuse, which must be installed in the + cable.

You can use the power supply for the joystick from an existing dashboard or ignition switch. This needs to be secured with the included 15A fuse.

The Jet thruster should be provided with a suitable main switch (not included).

The joystick operates on 12V. For vessels with a 24V installation, a DC-DC converter must be applied.

Cabling Jet Thruster Single: Preferably a neoprene cable with :

3 x 2.5 mm² (14 AWG) pump => valve
2 x 2.5 mm² (14 AWG) joystick => pump

Neoprene cables for* Jet Thruster Single *not included in installation kit.

*Please note: For a 12 Volts ship's circuit you need to install a series-parallel switch to be able to charge the system on 12V and use it on 24V. The JT-50, JT-70 and JT-90 come with a connection wire **F and G** as a standard accessory for this switch. **See appendix A2, A3 B1 and C1** for 24V Series parallel and page 68.*

Recommended battery cabling:

JT-30 (12V)	50 mm² (1/0 AWG) for 1 metre	JT-70 (24V)	70 mm² (2/0 AWG) for 1 m
JT-50 (12V)	70 mm² (2/0 AWG) for 1 metre	JT-90 (24V)	90 mm² (3/0 AWG) for 1 m
JT-50 (24V)	50 mm² (1/0 AWG) for 1 metre		

Recommended capacity:

Holland Marine Parts recommends maintenance-free calcium or AGM batteries.

JT-30 (12V)	105Ah 1x	JT-70 (24V)	120Ah 2x
JT-50 (12V)	165Ah 1x	JT-90 (24V)	165Ah 2x
JT-50 (24V)	105Ah 2x	***Use batteries with a high CCA rating!***	

Note: Cable ratings are for 1 meter (3,3ft) of cable. Longer runs require larger cable.
Remember that "to and from" the battery is the total length of the run and must be size accordingly.

For optimum performance keep battery cables as short as possible.

Charging the batteries:

In order to keep the ship's circuit separate from the Jet Thruster battery/batteries it is recommended to divide the charging current with a diode bridge or MosFet battery separator from the alternator.

Please note: More electricity will be required as a result of the installation of the Jet Thruster. That is why in some cases it is recommended for the alternator to be converted to high yield or to place a separate alternator.

Electrical diagram for connecting Single and Dual joystick control

See appendix A-1, A-2, A-3, B-1, C-1, D-1, D-2, E-1 and F-1

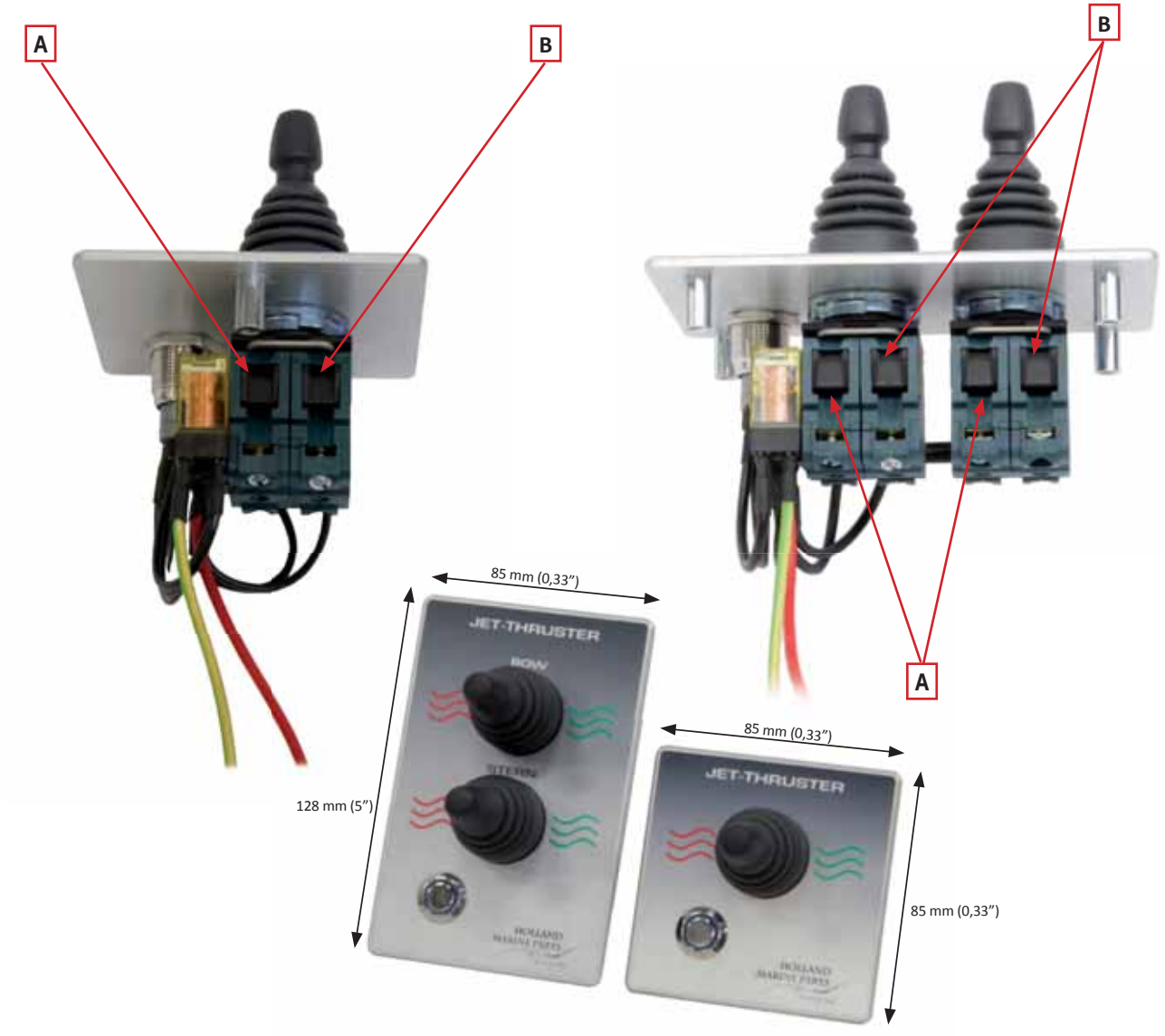
Step 1: For the installation of the joystick + front plate; drill a hole **70 mm (2 3/4")** in diameter, 2x for combi joystick (overlapping).

Step 2: Connect the **+** cable (red) of the joystick (with fuse 15A) to the 12V ignition switch or a control panel and connect the ground wire (green/yellow) to the ground of the ship's circuit.

The joystick operates on 12V, for vessels with a 24V installation a dc-dc converter must be applied.

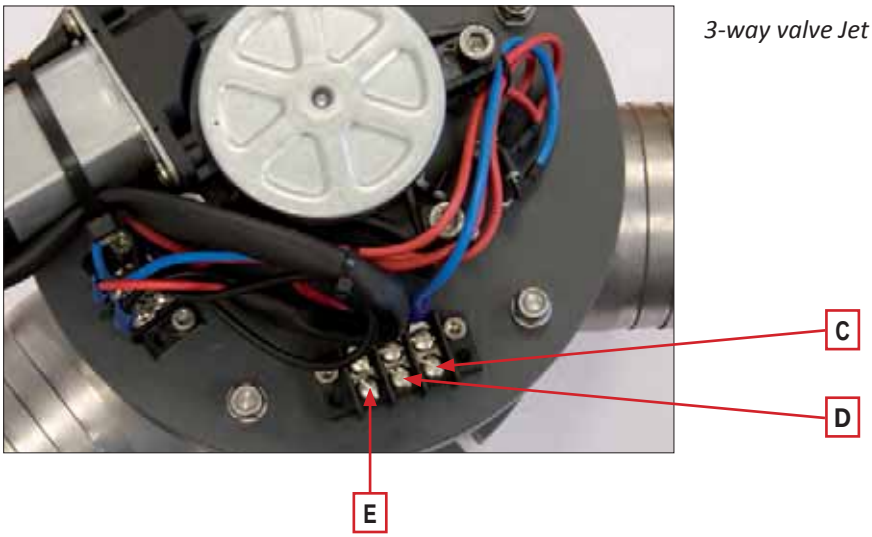
Step 3: **JT Single:** Pull one cable* (2x2.5mm², 14 AWG) from the joystick to the actuator support on the pump unit. Connect this cable with the screw connectors on both the actuator support on the joystick and the pump unit, marked **A and B.**

*Jet Thruster Combi: 4x2.5mm² (14 AWG)



Step 4: Install the joystick in the hole with the included bracket and assembly nuts. Screw installation nuts on hand tight.

Step 5: **JT Single:** Pull one cable (3x2.5mm², 14 AWG) from the pump unit to the 3-way valve and connect it to the screw connectors marked **C, D and E.**



3-way valve Jet Thruster Single

Step 6: **JT-50 24V, JT-70 and JT-90**: Use the connectors **F and G** on the pump to connect the series-parallel switch and continue with diagram **A-2, A-3, B-1, C-1, D-2, D-3, E-1 and F-1**

Step 7: Connect the insulated battery cables of the right type and place the main fuse and suitable main switch.

JT-30/JT-50 24V

JT-30 / JT-50 => 1 x 425A

JT-50 12V/JT-70/JT-90

JT-50 => 2 x 500A

JT-70 => 2 x 300A

JT-90 => 2 x 425A

Installing the Jet Thruster Combi

The Jet Thruster Combi works with one centrally placed pump unit and two 3-way valves for steering the bow and stern of your vessel.

What is distinctive about the Combi is that the water pressure from the pump unit is divided in the direction of the bow and stern. The manifold that is placed on the pump unit ensures this division.

In contrast to the 3-way valves of the Single edition of the Jet Thruster, the 3-way valves of the Dual are turned to a closed position whenever the system is not active. When the system is activated, water flows under pressure to the selected and opened 3-way valve. The advantage of the Jet Thruster Dual is that both 3-way valves can be operated simultaneously and in different positions.

This offers you the capability of operating the bow and stern independently of each other with one system.

See appendix D, E and F for a schematic view of installation.

Keep the following points in mind during the mechanical installation:

A: Position of pump unit and water inlet combination

B: Position of 3-way valves (see page 17)

C: Position of nozzles (see page 18-21)

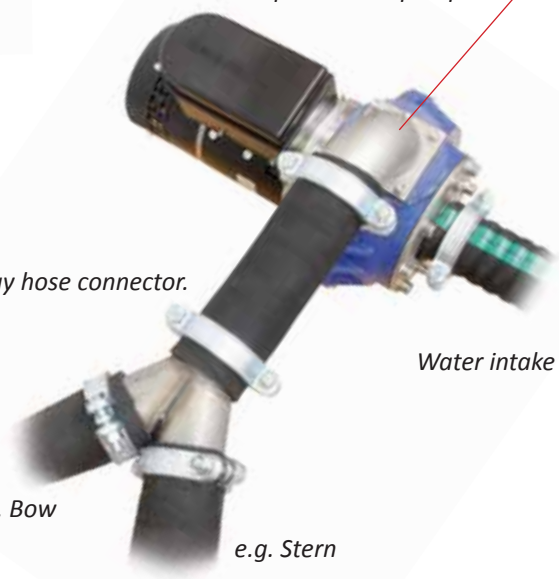
A: Position of pump unit and water inlet combination

Choose a central position for the pump unit; for example, in the midship, where you need to take the water inlet combination into account.

Very important: Pump head must be installed under the waterline!
From the pump outlet you connect a pressure hose to the 3-way valve in the stern. To make the most efficient use of the system, it is best to use the shortest possible hose lengths. If you need to make bends, these should be as fluid as possible. Prevent sharp bends. Every bend increases resistance and reduces efficiency.

2-way 90^0 Hose connector mounted on pump unit.
Two positions possible.

Four directional positions possible on pump unit.



Pump outlet 90^0 degrees in combination with 3-way hose connector.
Four directional positions possible on pump unit.

! The flexible hoses should be attached adequately to prevent vibrations and chafing. You should prevent the hose coming into contact with sharp parts or other elements present that could damage or pierce the hose.

The Jet Thruster should preferably be provided with its own battery. To make the most efficient use of the system, you should place the battery as close to the pump unit as possible and keep the battery cables as short as possible.

During simultaneous operation of the bow and stern, the thrust generated by the pump unit is divided over the bow and stern. Partly due to this, you can manoeuvre the ship laterally or around the ship's pivot point. However, the thrust per opened outlet is reduced during the simultaneous operation of the two 3-way valves present. Familiarise yourself with the reaction speed of the system.

B: Position of 3-way valve - See page 17.

C: Position of nozzles - See page 18-21.

Electrical installation Jet Thruster Combi

See appendix D-1, D-2, D-3, E-1 and F-1 for a schematic representation of the electrical connection.

The electrical connection of the Jet Thruster Dual includes two different phases.

Step 1: Power supply for the electric motor of the pump unit, see page 22. In the case of a 12 Volt vessel's circuit, the 24 Volt Jet Thruster systems JT-50, JT-70, and JT 90 should be provided with 2 batteries and a series parallel switch (see p. 68). See appendix A-3, E-1 and F-1 for the correct connection method of this switch.

Step 2: Connection and power supply of the control and operation of the Combi system.
Take note, the power supply for the relay unit is 12V!

The 3-way valves for the Jet Thruster Combi are standard equipped with a relays unit and 10m (31 ft) neoprene cable.
(5 x 1,5mm², 16 AWG)

V-101-00

Do not disconnect, remove or change the standard provided cables from the 3-way valve and the relays unit. This will void the warranty.

Step 3: Select position for valve and relays unit. Protect the electrical components from water. It is preferred to place the 3-way valve relay unit to be accessible for inspection.

Step 4: Pull the provided neoprene cable (5 x 1,5mm²) from the position where the valve is located to the actuator support on top of the pump unit. If necessary the cable can be extended with similar cable. (Cable type H07RNF)
Please note: do not combine different colors in the pairs. This can damage the system!

Step 5: Pull a cable (4 x 2,5mm², 14 AWG) from the joystick to the actuator support on to connect the joy stick with the AB AB screw connectors on the joystick and on the Actuator support.

Step 6: Pull a cable (1 x 2,5mm², 14 AWG) from the ignition / Joystick to the **+** srew connector on the actuator support.
(option: instead of step 5 and 6 apply a 5 x 2,5mm², 14 AWG cable).

Connection on the contactor support:

See appendix: D-1, D-2, D-3, E-1, F-1 for detailed information to connect the valves to the actuator support.

Combine the following wires from both valves and connect to the screw connectors on the actuator support:

Brown (pair) to **position 18** on relay
Green (pair) to E on screw connector
Black (pair) to – (minus) on screw connector

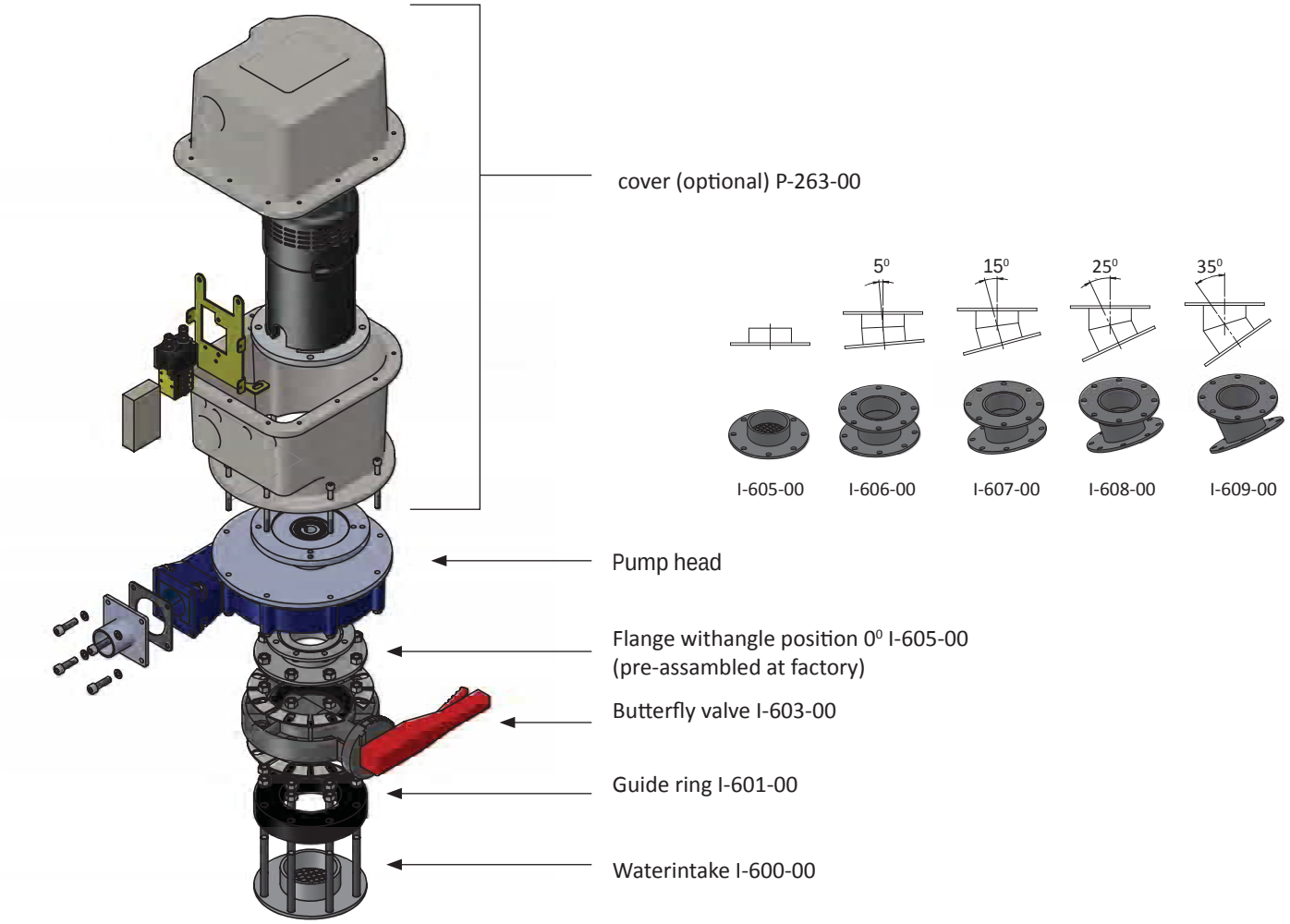
Blue and grey from valve A
Blue to **1st** A combined with A from Joystick
Grey to **1st** B combined with B from Joystick

Blue and grey from valve B
Blue to **2nd** A combined with A from Joystick
Grey to **2nd** B combined with B from Joystick

Please note: If the thrust force is to the opposite side than selected with the joystick, switch A and B pairs to alter the direction. Please note: Only switch the A and B within this pair!

Installing the Jet Thruster Vertical

The setup of the vertial Jet Thruster pump unit is ideal for engine rooms with less draft and few space available.
The pumpunit is mounted directly on the water intake. The intake itself can be shut and if necessary the pumpunit can be removed for maintanence or other purposes.



Procedure to install the water intake combination

Be sure to apply the IP protective cover in gasoline areas.
Make sure there is enough space available to place this cover. See page 32

Select optimum position for water intake I-600-00. Make sure at least the pump head is below the waterline.
If this is not possible at the selected place of choice, do not continue.

Outside of the vessel. Before any holes are drilled, make sure there is sufficient space inside the vessel to fit in all components.
Make sure the handle of the butterfly valve can be fully opened and closed!
The drill pattern of the water intake part is responsible for the final position and angle of the vertical mounted motor.
It s advisable to pre assemble all parts and fit the complete set in on the inside of the vessel. Drilling pilot holes for the water intake flange in this particular case will ensure the motor is placed vertical after the water intake is correctly placed according to the pilot holes and the drill pattern of the water intake flange.

1

Drill a 102mm/4inch hole in the vessel plating.
Drill 8x 12,5mm - 1/2inch holes

I-600-00
Use the provided Drill pattern to correctly drill the required holes.

I-604-00

2

Apply Sikaflex 291i of 3M 5200 polymer sealant to securely mount the Water intake I-600-00 and flange into the hole, make sure to apply enough sealant on each part of the flange. The polymer sealant provides if applied correctly a very strong seal. If necessary smoothen the surface of vessel plating in order to provide a flat spot on which the flange will attach. Make sure the Water Intake is well installed and makes a good contact with the vessel plating.

Inside the vessel
Make sure the vessel plating has a leveled, smooth and clean surface where the guide ring I-601-00 is placed over the flange and bolds of the water intake. Check strength of the vessel plating. If necessary locally reinforce the position of the Water Intake to ensure the strength and integrity of the vessels hull. In case of doubt consult a professional boat builder.

3

Slide the PVC guide ring on the part of the flange and bolds that are in the boat. If necessary thoroughly smoothen the inside of the hull to create a flat surface on to which the PVC flange will be placed.
Apply Sikaflex 291i or 3M 5200 Marine Sealant on the side that contacts the vessel plating, flange and bolds.
Provides a excellent waterproof connection!

4

Install the buttefly valve on top of the pvc ring. Make sure to check the opening direction of the lever is not obstructed. The valve has to be opened fully for a correctly functioning system.

5

Apply the provided SS316 support flanges I-602-00 in a pattern according to this picture. Connect the butterfly valve with the parts that lay beneath it by fastening the 4 nuts. DO NOT OVERTIGHTEN THE NUTS, THIS WILL DAMANGE THE VALVE! **Only when the 4 flanges are correctly installed in the receses of the valve the pump unit can be removed when the boat is in the water.**

6

Apply Sikaflex 291i or 3M 5200 marine sealant on the rubber gasket on the butterfly flange that contacts the PVC guide ring I-601-00 Remove spilled sealant to prevent inner parts of the valve from jamming.

Do not apply sealant on the top rubber gasket of the valve!

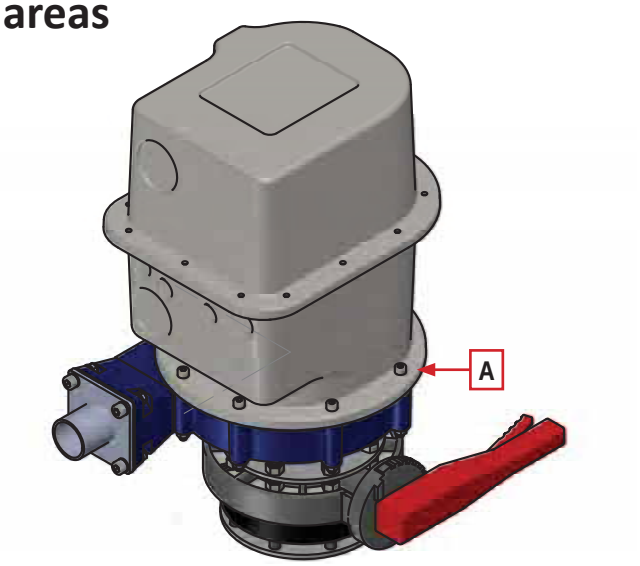
Place the pump unit with the pre assembled angled flange on top of the butterfly valve.

Thoroughly fasten all 8 nuts to create a watertight connection of all parts.

Angled flange to assure vertical position of pump unit on a sloped hull. See page 29 for available flanges. Note: pre-assambled at factory.

Continue with the installation procedure as stipulated at page 14

IP protective cover for gasoline engine areas



All electrical DC Jet Thruster motors are thermally protected from overheating. If there is no sufficient cooling provided by means of fresh air, this thermal protection will limit operating time of the system.
Provide sufficient cooling at any time!

In case the pump unit is installed in a gasoline engine area , the special designed IP Cover has to be applied on the motor of the pumpunit to avoid possible explosion that may occur in case of spilled fuel, fuel leakage or locally present fuel vapor.

Remove the 8 nuts from the SS316 flange on which the blue plastic pump house is attached. This will not disconnect the pump house from the flange! **A**

Place the rubber gasket, apply sufficient polymer sealant on the rubber gasket and slide the base section on the unit into place. The front of the IP Cover points towards the pump outlet as stipulated in this picture.

Continue with the electrical installation according to diagram.
See appendix A-1 p. 38 , A-2 p. 40, A-3 p. 42, D-1 p. 54, D-2 p. 56 and D-3 p. 58 of this installation manual to correctly install the cabeling.

There are special recesses casted in the IP Cover. Use the recesses in the base of the cover to place glands, and create an airtight connection at all times!

Drill a 76mm or 3 inch hole in both recesses. One in the base and one in the top cover and install the plastic hose connector. Make absolutely sure you create a airtight connection. Apply suitable hose on both hose connectors to enable cooling air run in and out.

The JT-30 does not have a built in ventilator. Use a 12v, external engine room ventilator to enable cool air running thru the IP Cover.

The JT50 is equipped with an internal ventilator. This ventilator will create an airflow during operation. The ventilator will suck in cool air. The air intake has to be installed at the bottom 76mm/3inch hose connector en will expel the air from the top hose connector.

Do not remove the layer of foam from the inside of the top IP Cover. This foam enables airflow in side the cover.
After all installation is finished, place the top cover, the gasket and thoroughly connect the top cover with the base cover by tightening the provides screws.

User Guide Jet Thruster Holland Marine Parts

JT-30
JT-50
JT-70
JT-90

Your vessel is equipped with a Holland Marine Parts electric Jet Thruster. For the safe and correct operation of this system Holland Marine Parts recommends every user to carefully study this operating guide. Familiarise yourself with the system by trying it out in various weather conditions. The windage and draught as well as the weight of your vessel are factors contributing to how well the system operates.

Warnings:

- The Jet Thruster is not a replacement of the main controls but assists with the execution of difficult manoeuvres.
- Familiarise yourself with the way your vessel responds to your operation of the system.
- The electric motor produces heat. The thermal protection limits continuous operation to about 4 minutes.
- The water inlet is located on the bottom of your vessel. Inquire about the exact location of the water inlet grating.
- Prevent the system from sucking in large amounts of sand and dirt. Do not activate it when you have less than 30cm (12”) of ground clearance.
- The nozzles of the Jet Thruster are located beneath the water line. Do not activate the system and do not operate the Jet Thruster when there are people, animals or vulnerable items in the vicinity of your vessel and the inlet and orifices.
- Close all the valves when you are not aboard. Inquire about the local regulations in ports with regard to closing the valves.

Operation:

You operate the Jet Thruster by activating the system on the front plate of the control panel by pressing the button (A). This switch is illuminated in blue when the system is active.
Operate the Jet Thruster by moving the joystick(s) (B) left or right, moving the bow or stern to port or starboard, respectively. When equipped with push buttons, the same procedure applies, the push buttons being illuminated in green or red light.

Duration of activation:

Prevent the use of many short pulses. Instead, move your vessel by means of pulses that last a few seconds. The efficiency of the system is determined in part by the battery capacity present. The overheating protection will activate when the system is active for an extended period of time. After the engine has cooled sufficiently this protection is removed. The cooling time is determined in part by the ambient temperature.

Jet Thruster Combi:

The control panel is equipped with two joysticks or push buttons. You can move sideways by operating both push buttons for bow and stern at the same time. You can manoeuvre the vessel around the centre of rotation by manoeuvring the bow to port and the stern to starboard, or the other way around.

Troubleshooting

If the system is not functioning:

	Problem	Cause	Solution
1.1	System is not working (power indicator off)	Joystick not receiving power	Press the switch
1.2	System is not working (power indicator off)	Joystick not receiving power	Check fuse 15A behind joystick
2.1	System is not working (power indicator on)	Battery dead or main fuse broken	Check / replace fuse
2.2	System is not working (power indicator on)	Damaged relay Overheating protection activated	Contact your dealer Leave engine to cool
3.1	Engine running, no activity	Valves closed	Check whether or not valves are closed
3.2	Engine running, no activity	Engine does not draw water	Place pump unit inlet below water line
3.3	Engine running, no activity	Polluted system (shallow water)	Run engine in deep water until clean
3.4	Engine running, no activity	Damaged impeller	Contact your dealer
4.1	Engine running, no activity	System operates inverted	Cabling fault Exchange A and B on the pump unit
4.2	System is not efficient enough	Low battery voltage	Charge batteries, see electrical installation page 22 Check actual voltage at meter.
4.3	Too little power (JT-50 24V, JT-70 and JT-90)	Series-parallel does not activate, system runs at 12V	Check connections series-parallel switch

Winterising:

Preferably have the system winterised by a specialist.

Please note: *Frost can do a lot of damage if you fail to drain the system. Use a compressor to remove the water present in the system by means of air pressure.*

Please note: *Excessive pressure may damage the system. Check the operating pressure you use to pressurise the system with. This operating pressure must not exceed 2 bar (30 psi).*

Step 1: Disconnect the + cable from the battery.

Step 2: Close all valves.

Step 3: Remove the blind plug or air valve in the outlet (A) of the pumpunit.

Step 4: Screw a compressed-air nipple in the outlet.

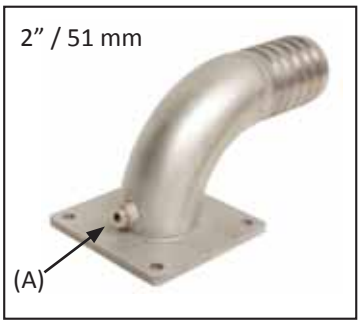
Step 5: Pressurise the system. **MAX 2 BAR (30 psi)!**

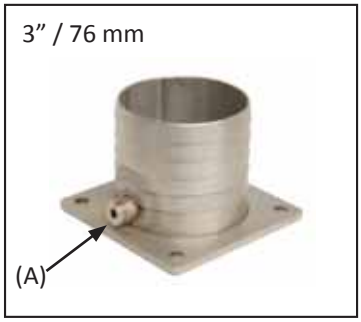
Step 6: Open the ball valves one by one and close them the instant you hear a bubbling sound. Repeat this procedure for every ball valve.

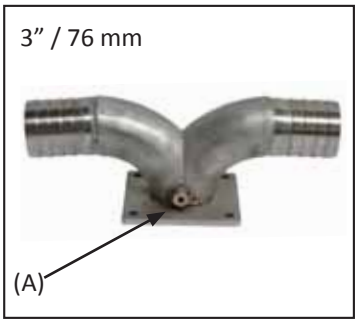
Step 7: Remove the compressed-air nipple.

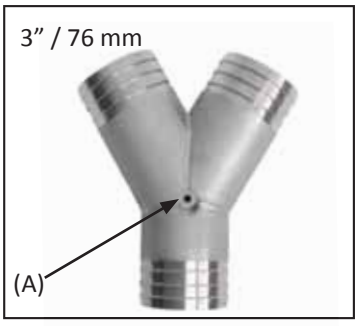
Step 8: Replace the blind plug or airvalve.

In addition you can drain the pumphouse, therefore remove draining plug for draining the pumphouse.







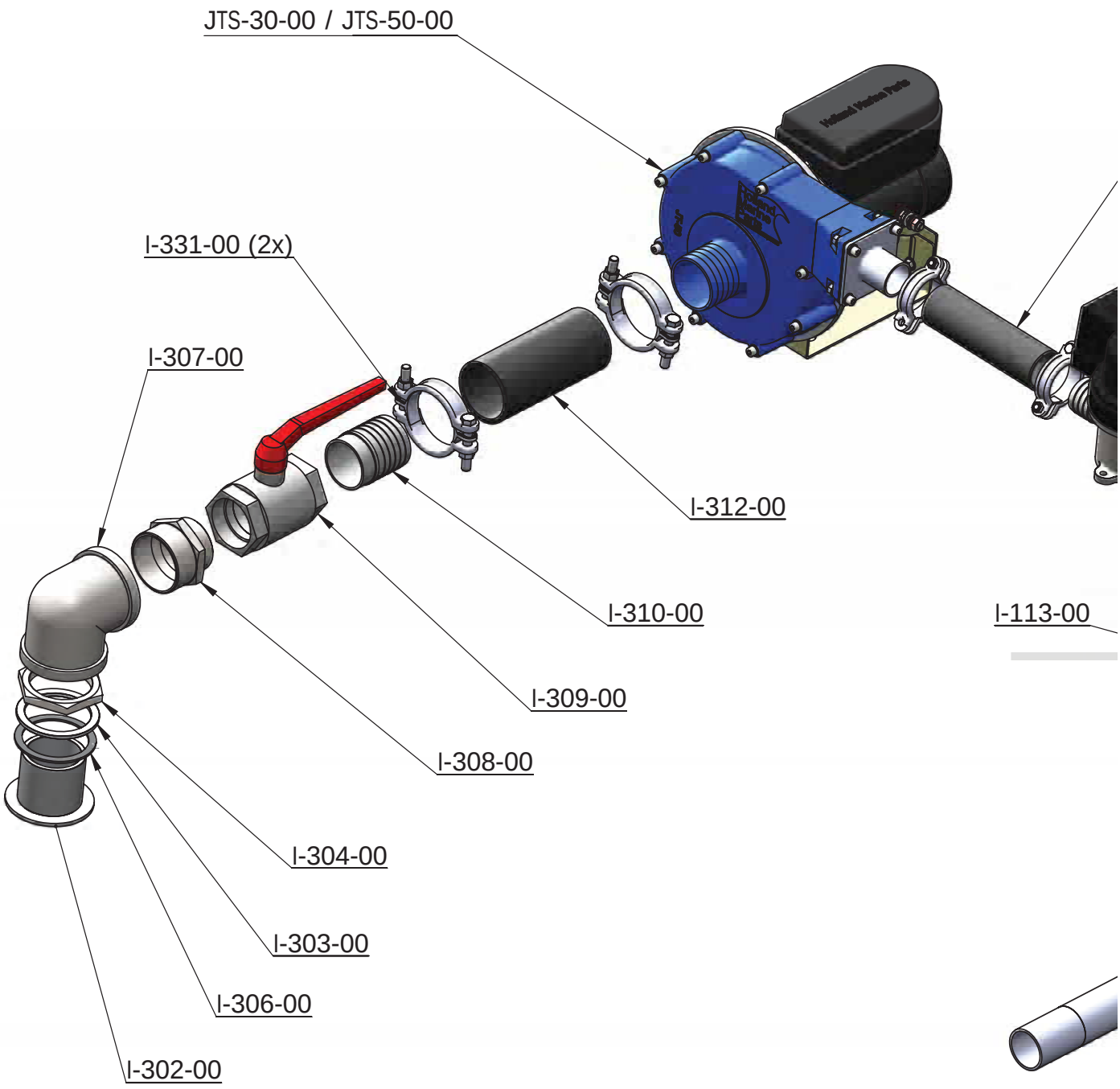


JT-30 / JT-50

JT-70 / JT-90

Appendix A, exploded View JT-30 / JT-50 Single

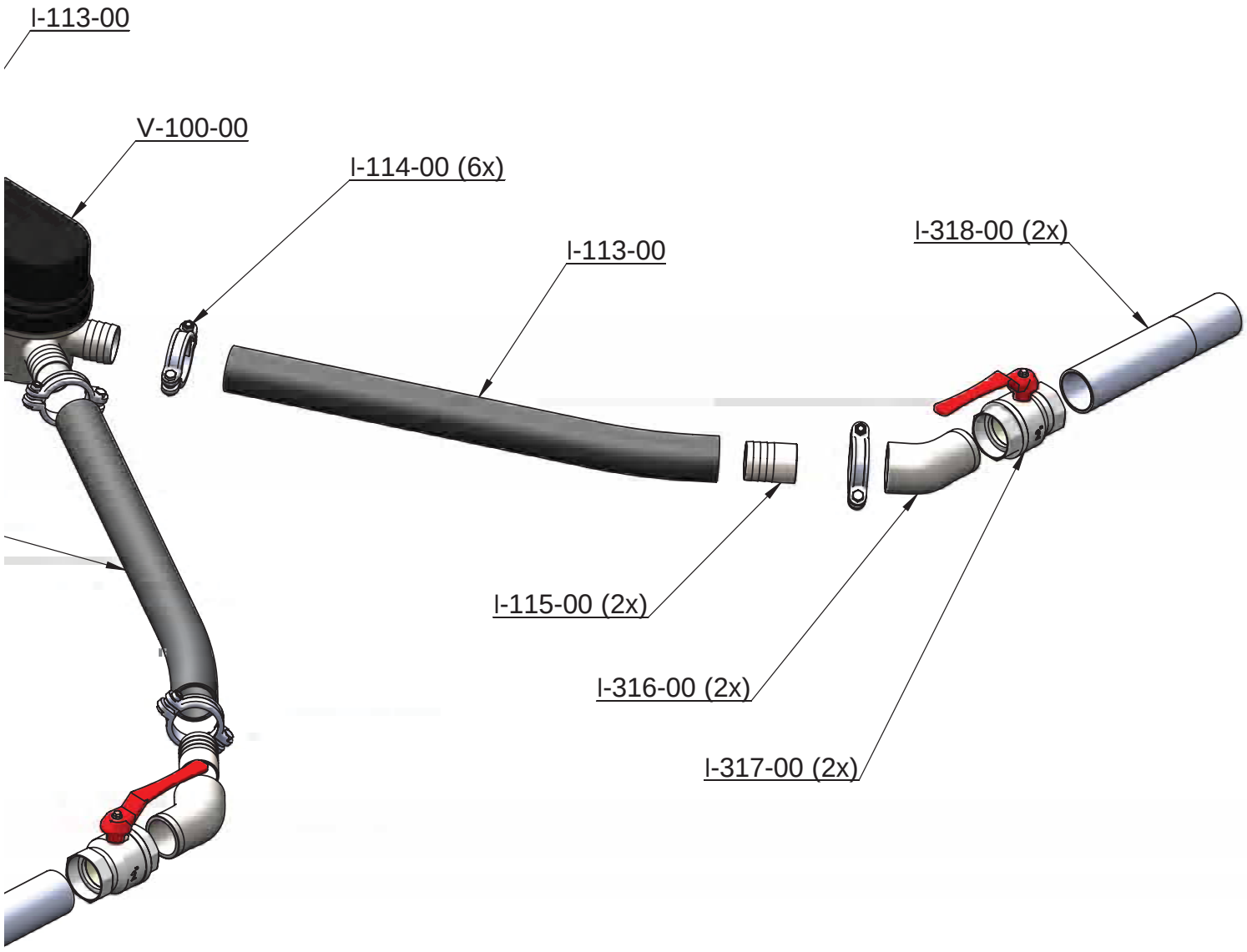
JTS-30-00 / JTS-50-00



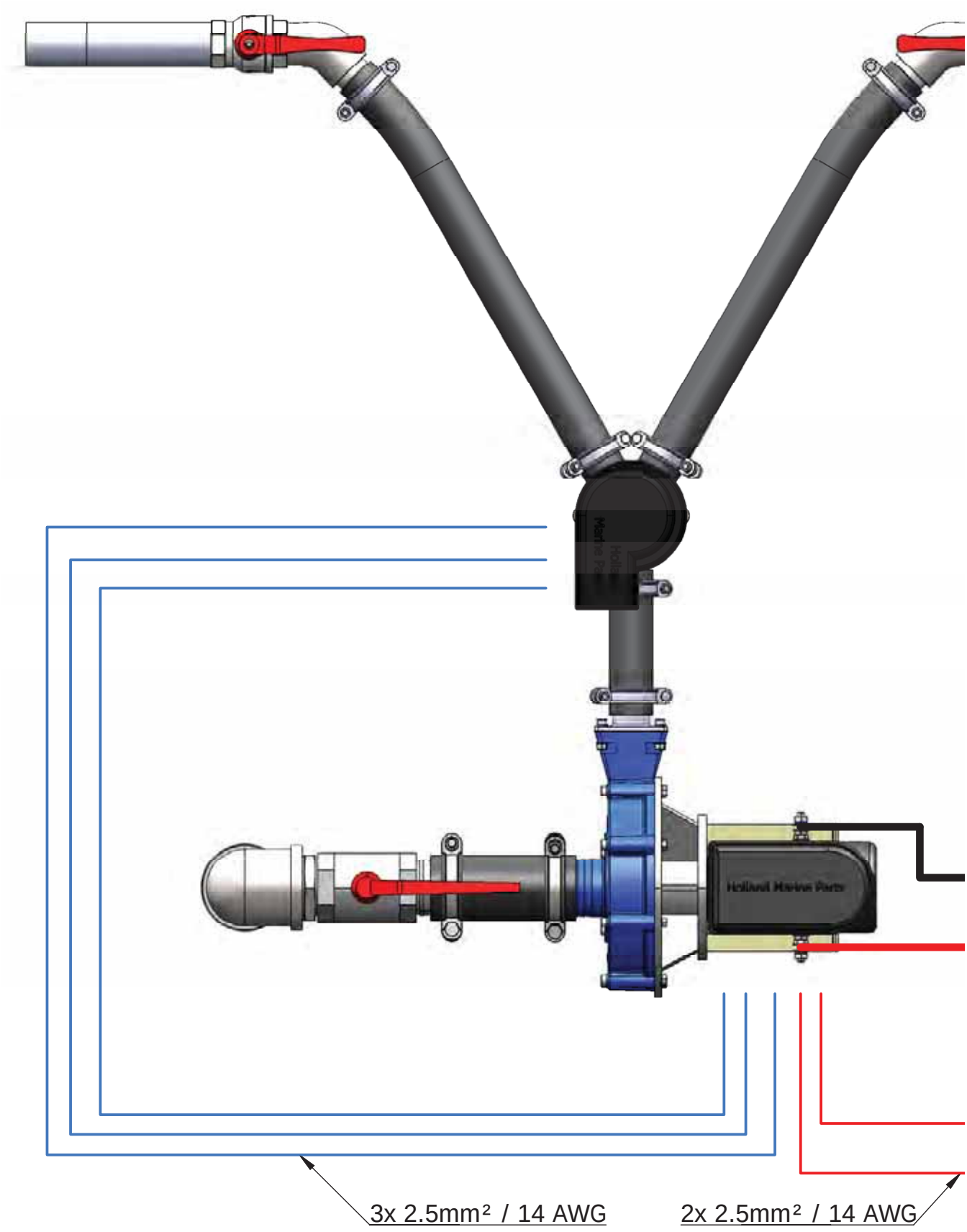
Pumpunit JT-30 / JT-50

3-Way valve	V-100-00

Water inlet	I-302-00	Hose clamp 77-94 mm	I-331-00
Ring 3”	I-303-00	Hose 3”/76 mm / L=1m/3.3 ft	I-312-00
Nut 3”	I-304-00	Pressure hose 2” / 51 mm	I-113-00
Seal Rubber	I-306-00	Hose clamp 48-60 mm	I-114-00
Elbow 90^0 3” BSP	I-307-00	Elbow 45^0 2” BSP M/F	I-316-00
Reducer 3” BSP / 2,5” BSP	I-308-00	Hose connector 2” / 51 mm	I-115-00
Ball valve 2,5” BSP	I-309-00	Ball valve 2” BSP	I-317-00
Hose connector 3” / 76 mm	I-310-00	Nozzles	I-318-00

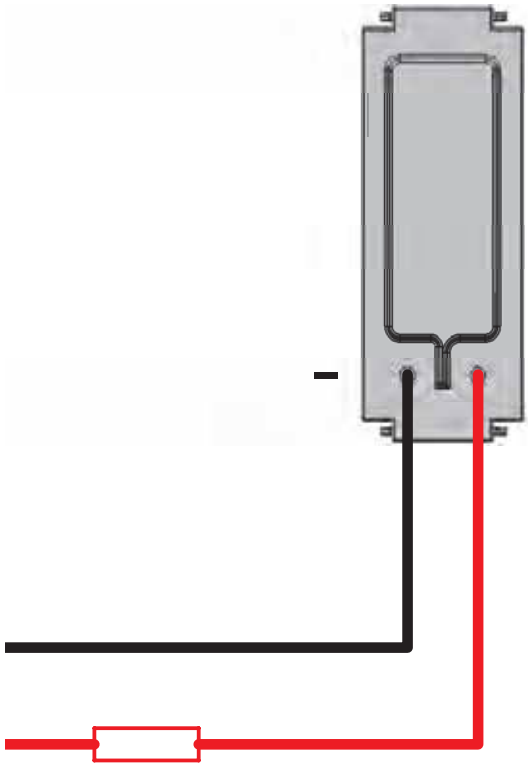


Appendix A-1, Electrical installation 12V, JT-30 Single



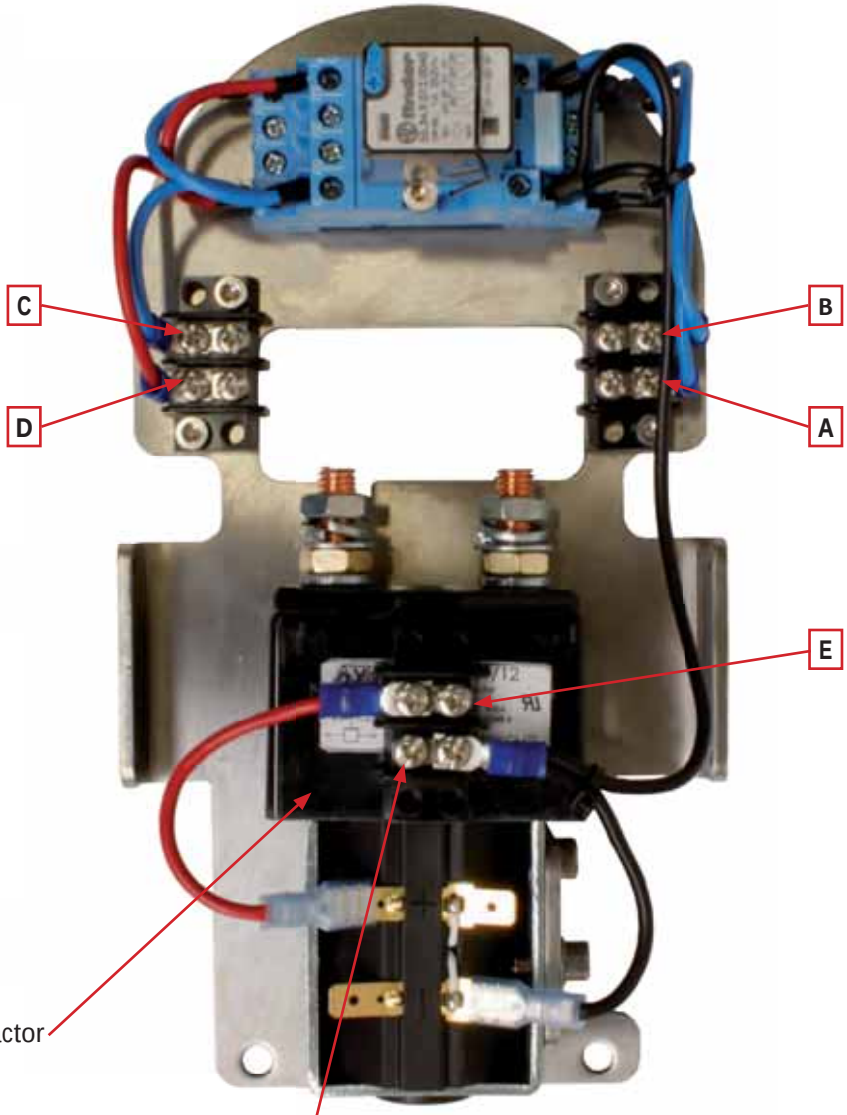
- **Connect battery + to free contact at contactor***
- **Connect battery - to E cable from E-motor.**

Battery



Fuse 1x 425A

Contactor support on pump unit



Joystick

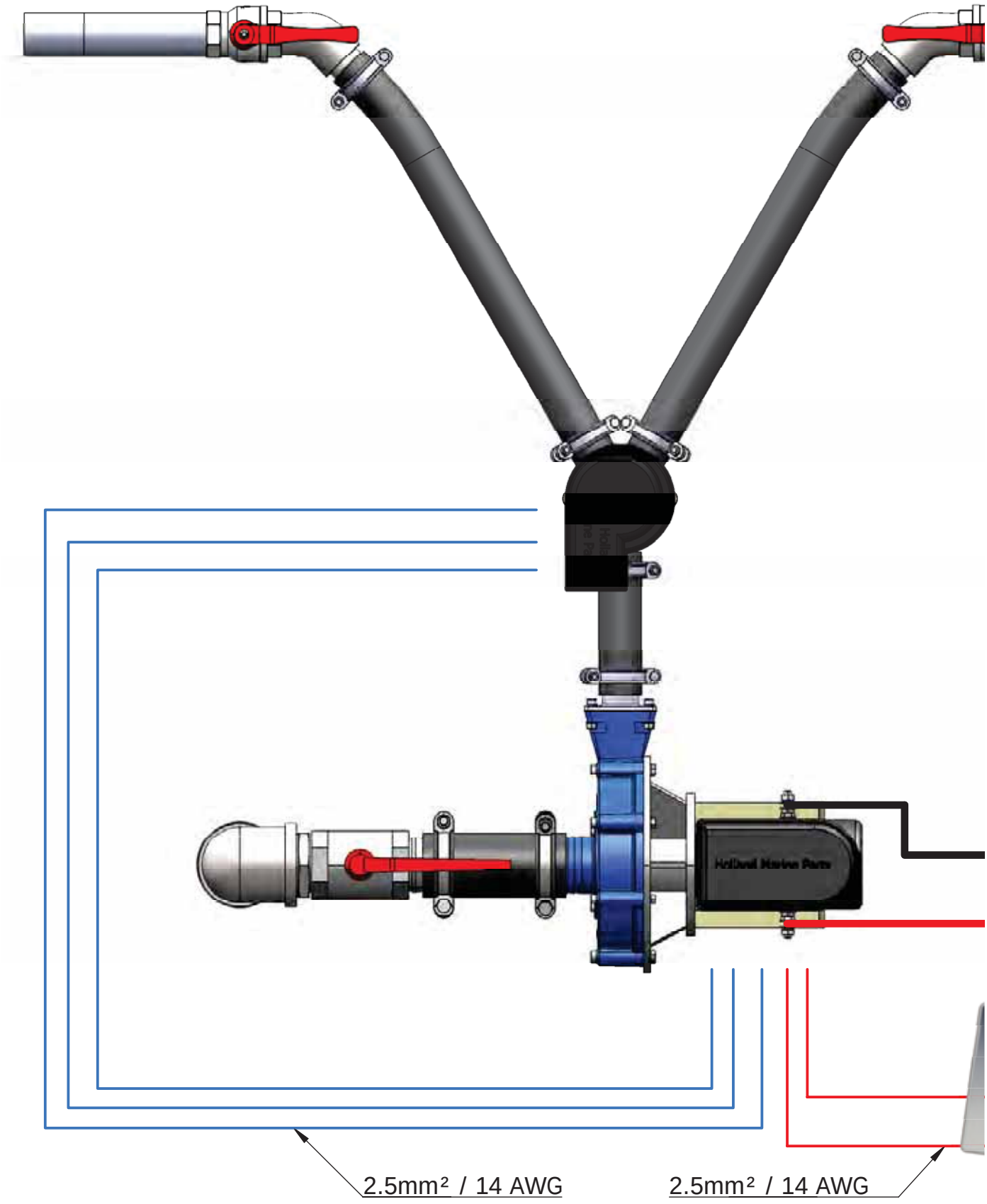
Fuse 15A

+Ignition

-Ground

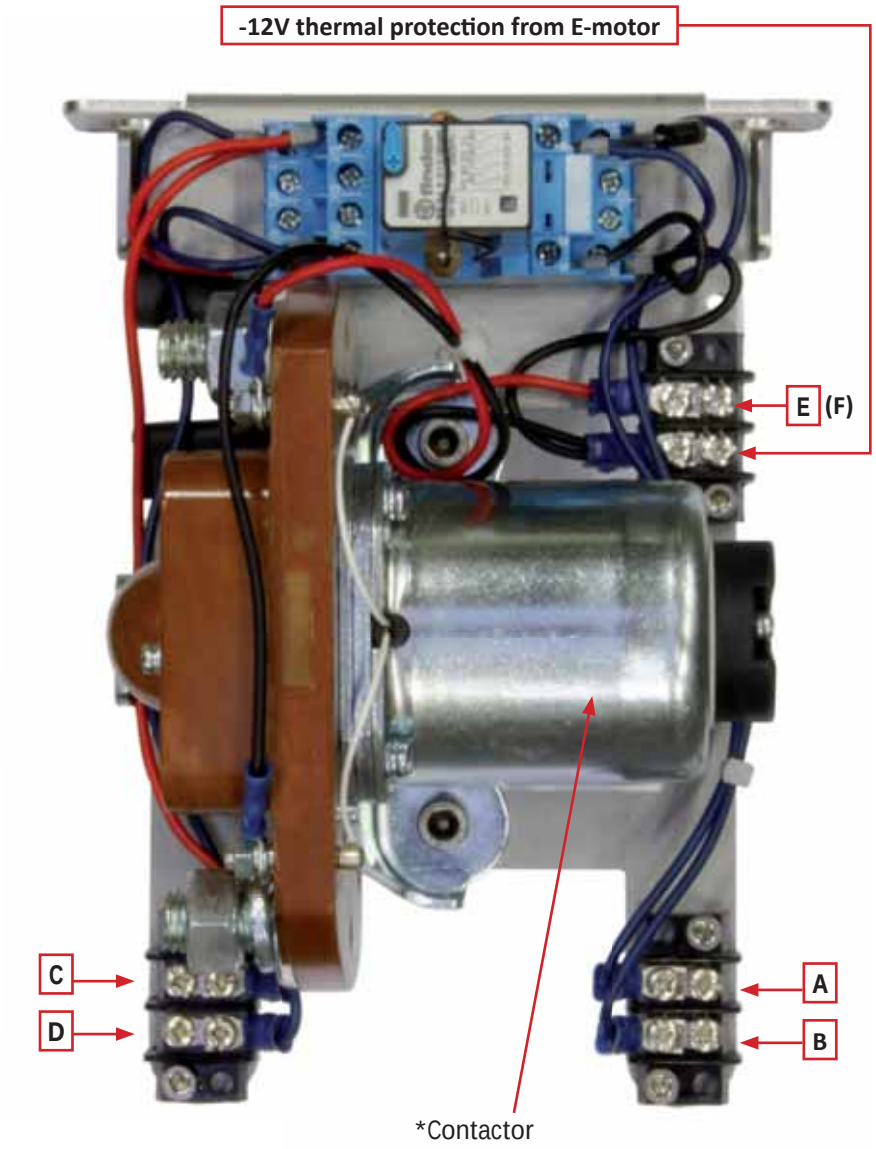
12V

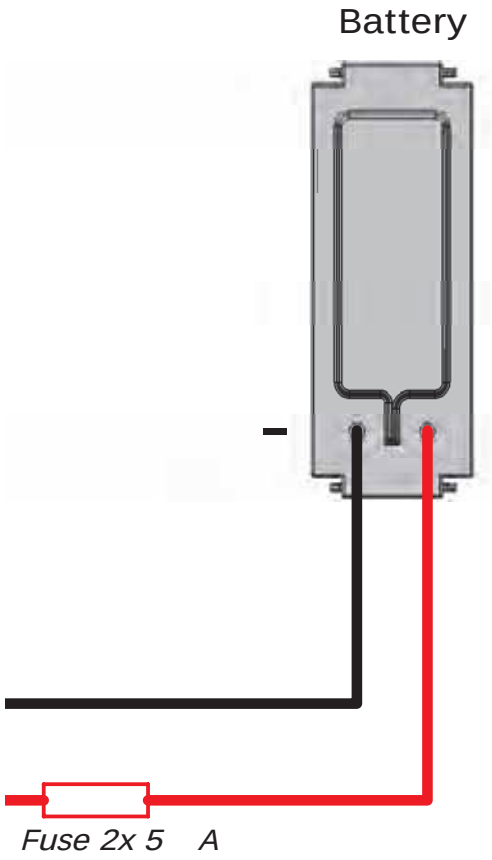
Appendix A-2, Electrical installation 12V, JT-50 Single



- Connect battery + to free contact at contactor*
- Connect battery - to A cable from E-motor.

Contactor support on pump unit





Fuse 15A

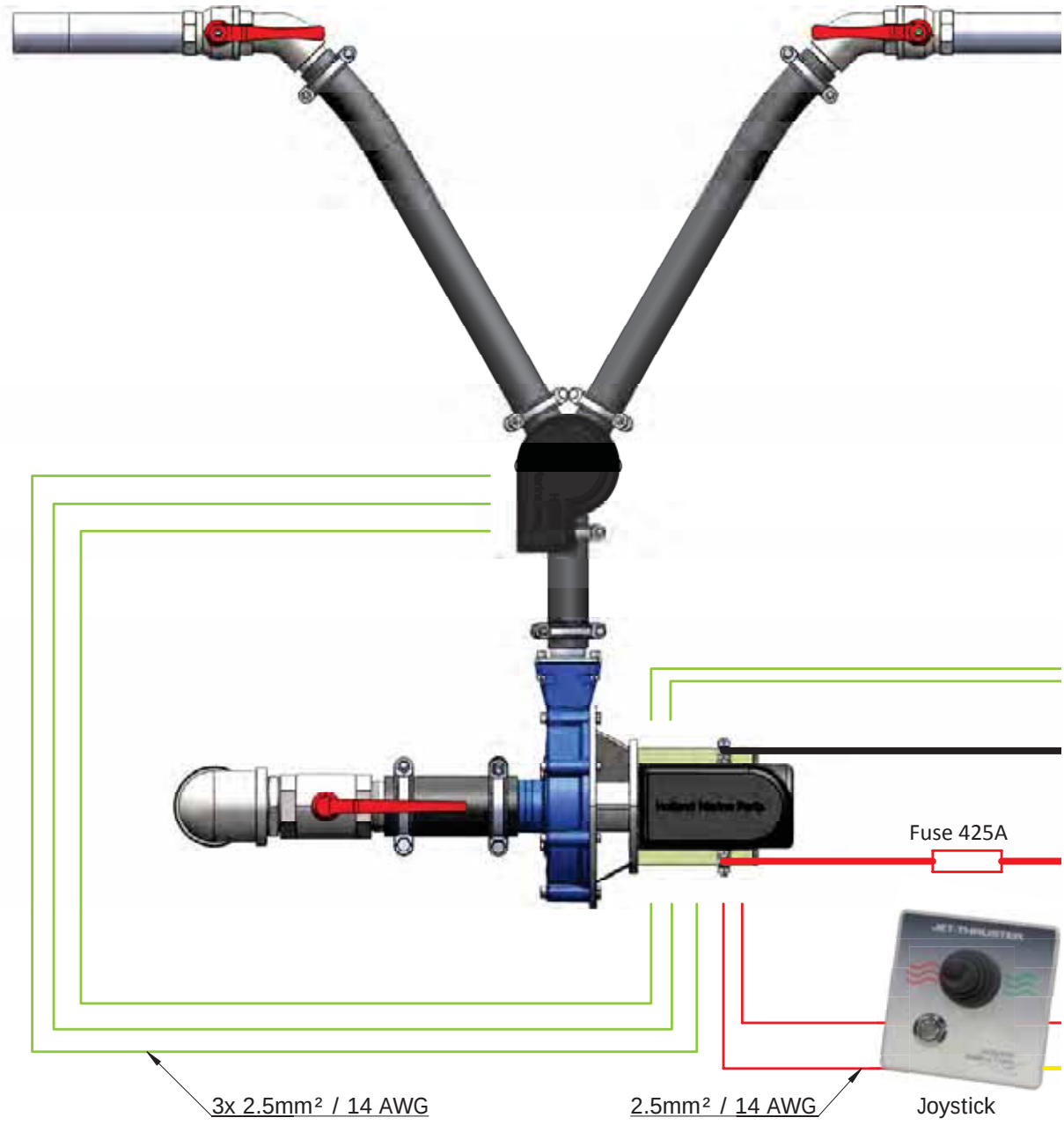
+Ignition

-Ground

12V

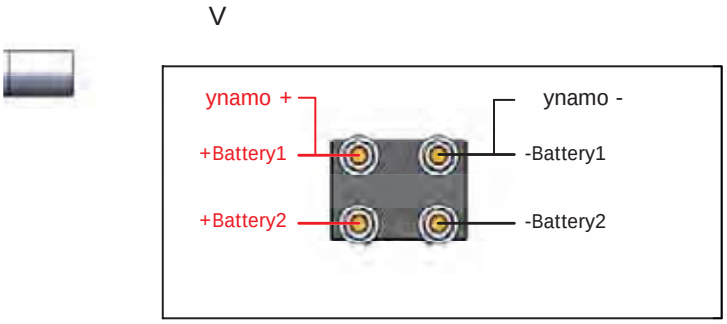
Appendix A-3, Electrical Installation 24V Series Parallel Switch, JT-50 Single

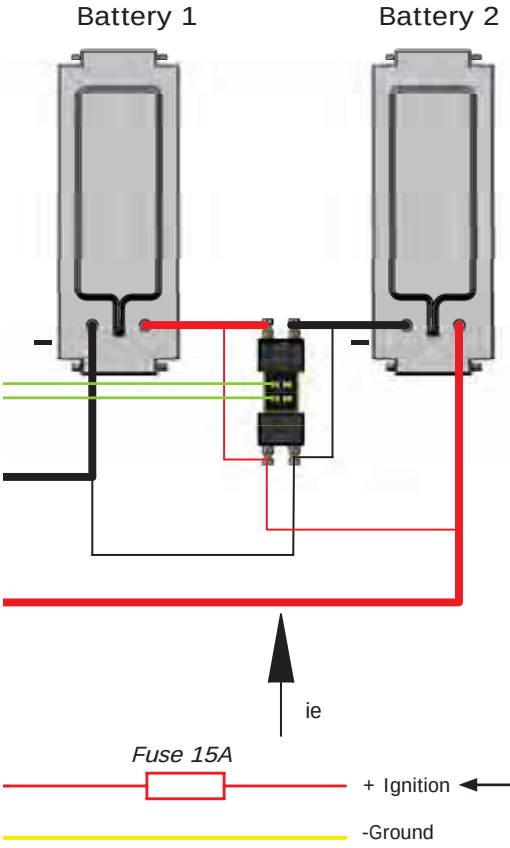
For correct installation of series parallel switch see page 68.

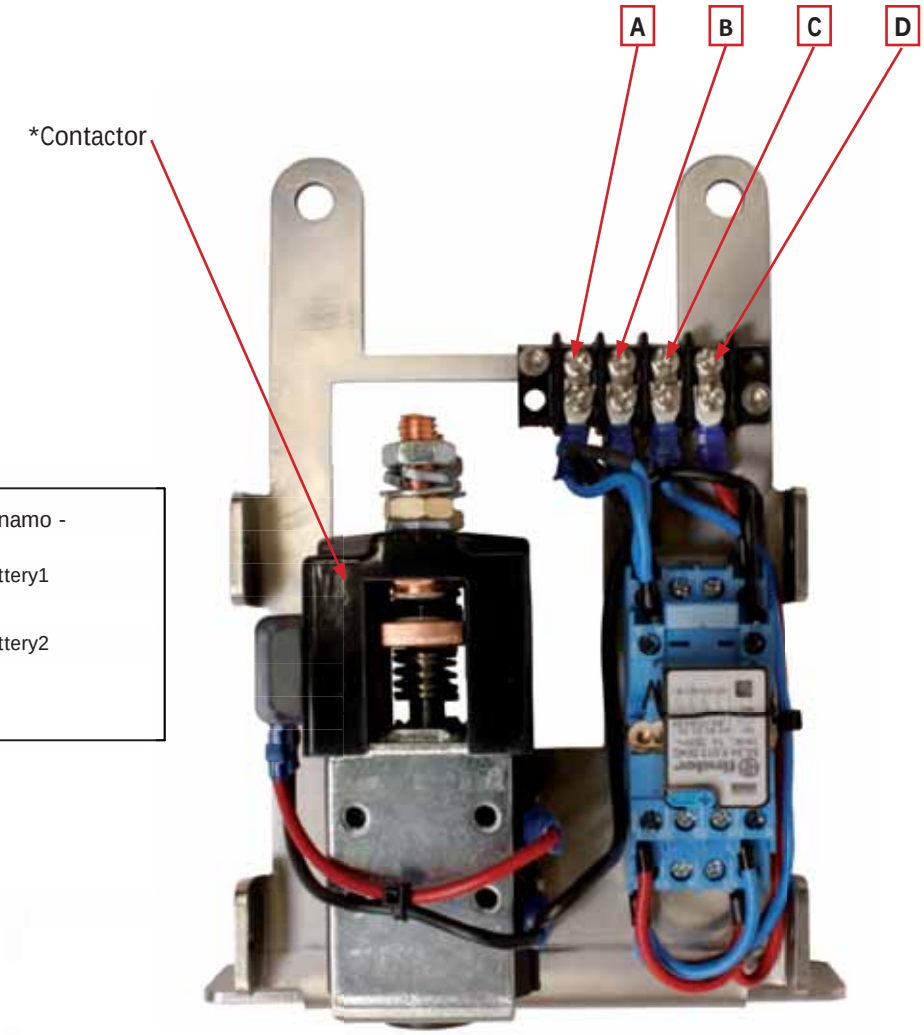


- **Connect battery + to free contact at contactor***

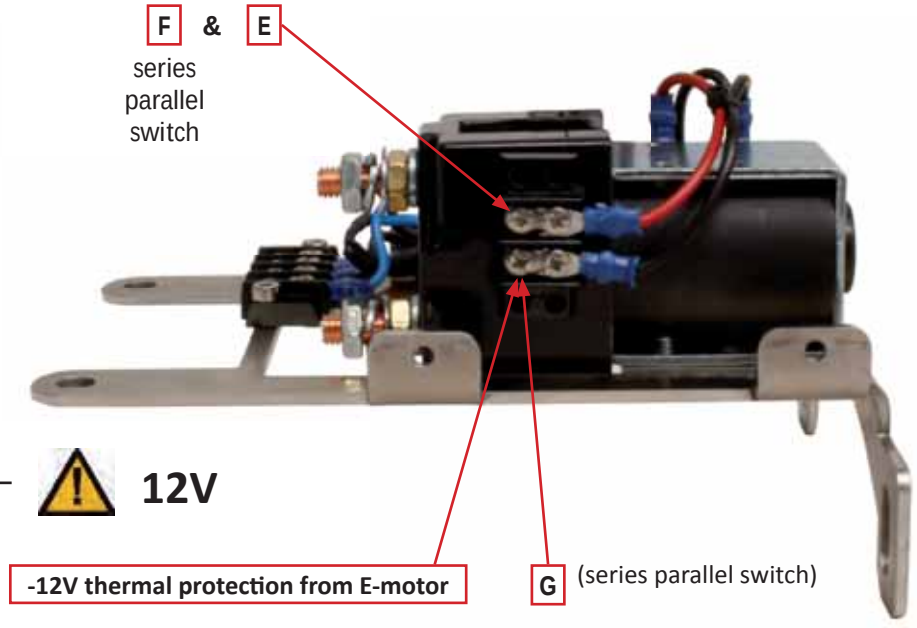
- **Connect battery - to A cable from E-motor.**







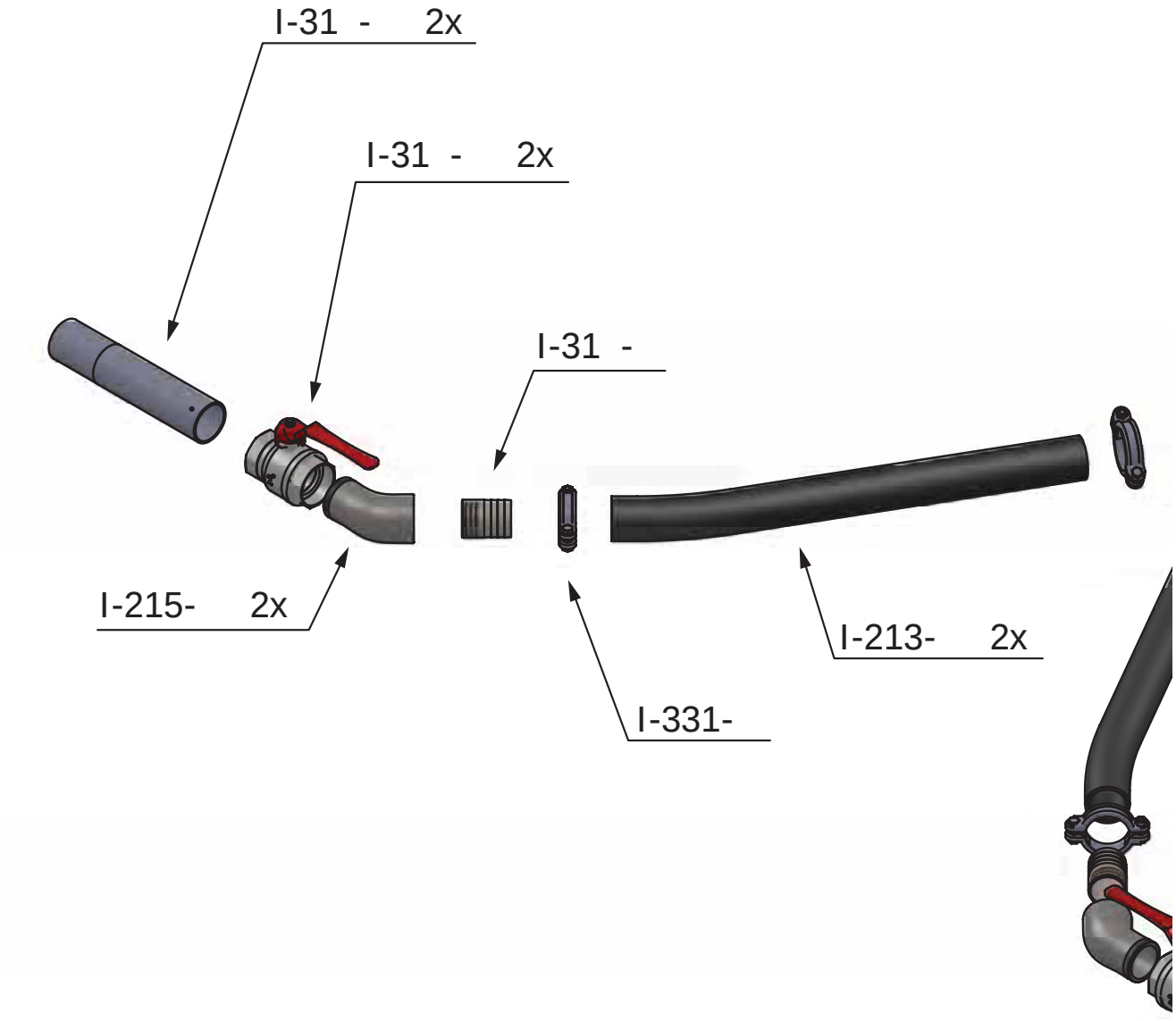
Contactor support on pump unit

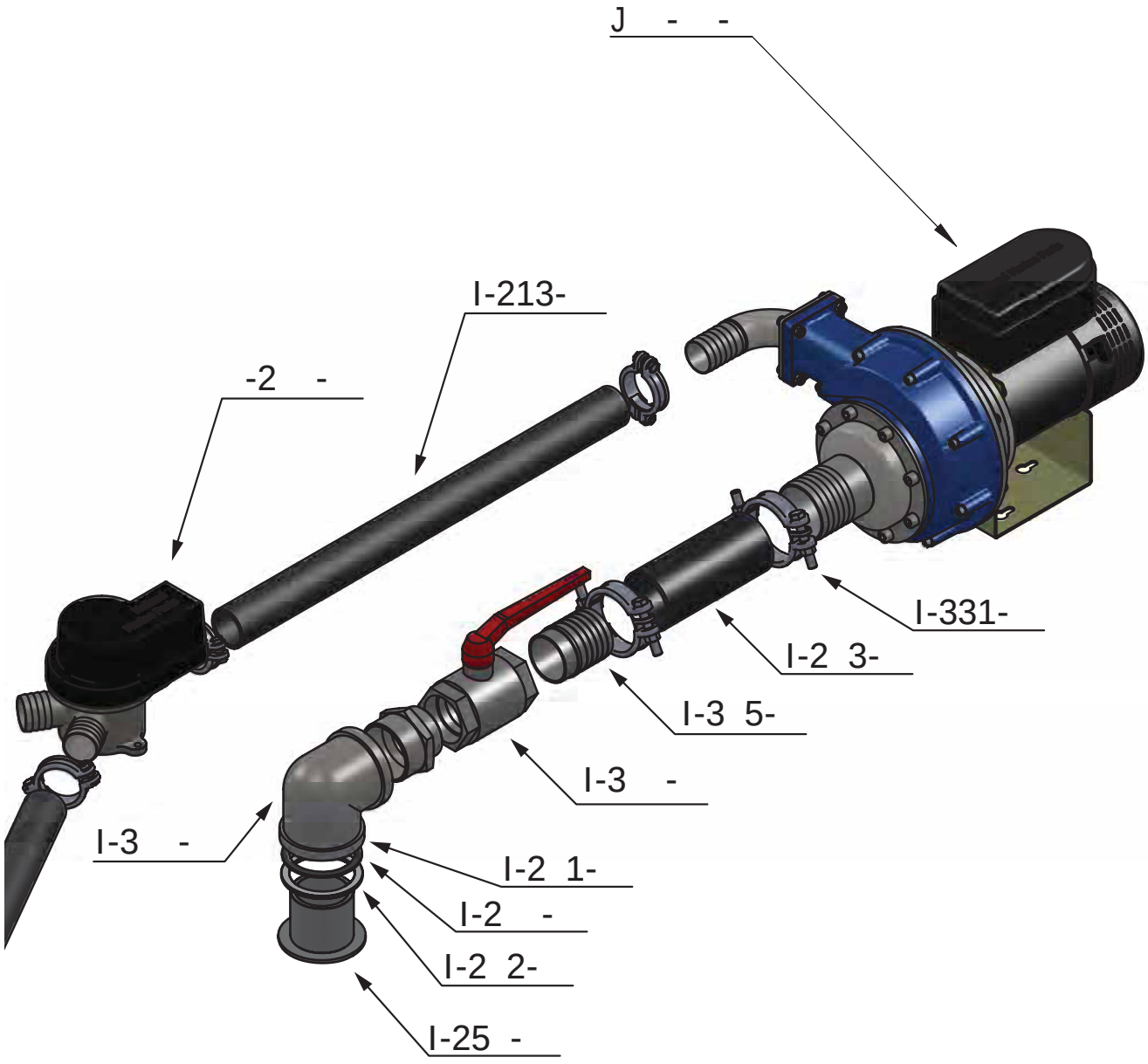


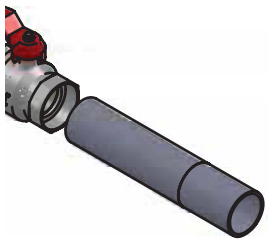
Appendix B, exploded View JT-70 Single

Pumpunit JT-70	JTS-70-00
3-Way valve	V-200-00

Water inlet 4”	I-259-00	Hose 3”/76 mm / L=1m/3.3 ft	I-263-00
Ring 4”	I-260-00	Pressure hose 2,5”	I-213-00
Nut 4”	I-261-00	Hose clamp 77-94 mm	I-331-00
Seal Rubber	I-262-00	Elbow 45^0 2” BSP / M/F	I-316-00
Elbow 90^0 3” BSP	I-307-00	Hose connector 3”/76 mm - 2” BSP	I-215-00
Ball valve 3” BSP	I-264-00	Ball valve 2” BSP	I-317-00
Hose connector 3” / 76 mm	I-365-00	Nozzles	I-318-00

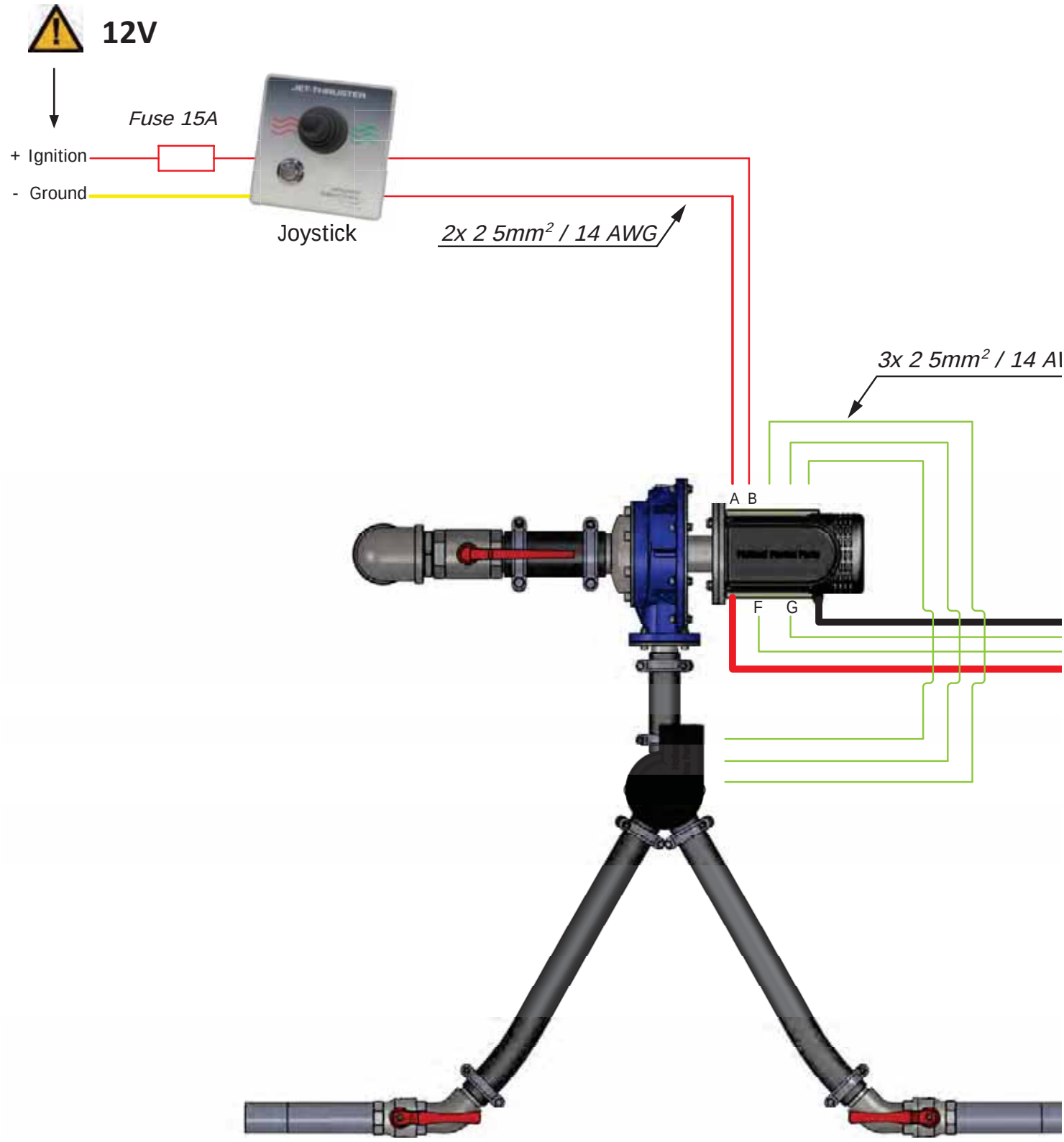



J - -
I-213-
-2 -
I-331-
I-2 3-
I-3 5-
I-3 -
I-3 -
I-2 1-
I-2 -
I-2 2-
I-25 -



Appendix B-1, Electrical Installation 24V Series Parallel Switch, JT-70 Single

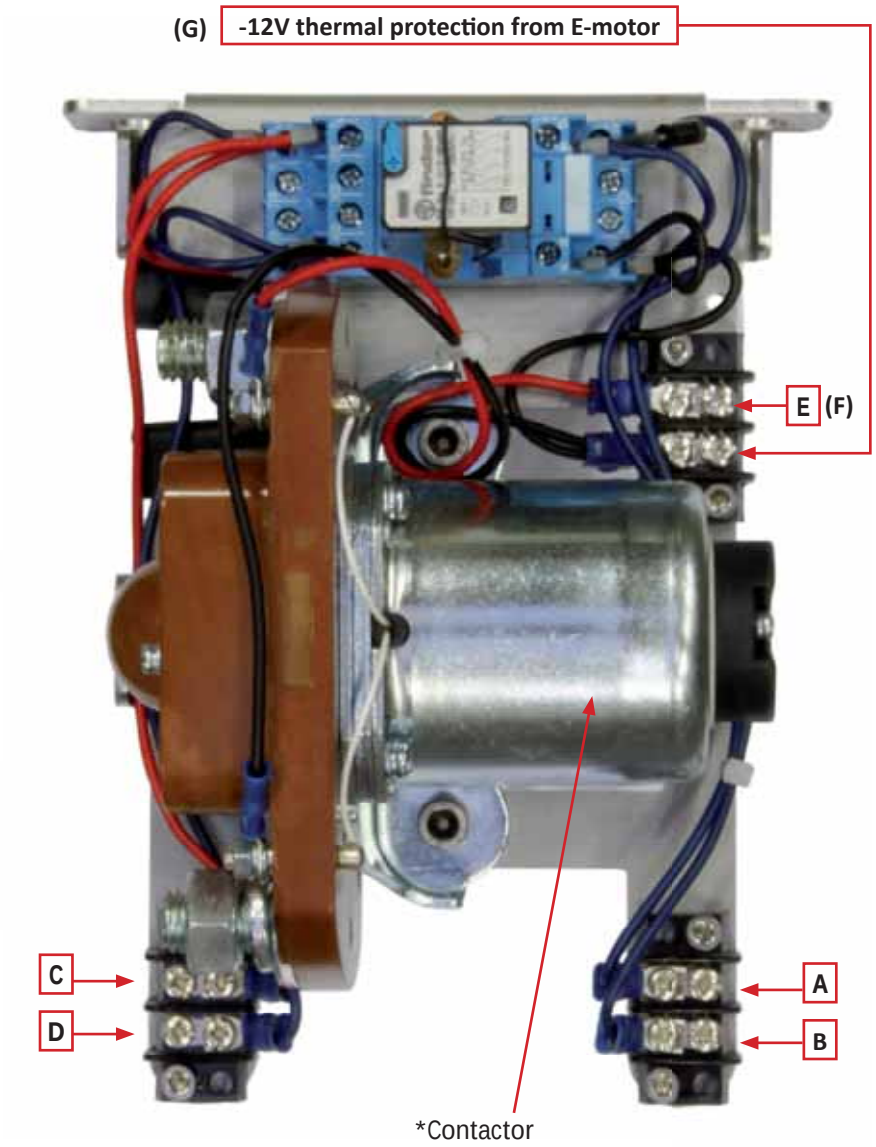
For correct installation of series parallel switch see page 68.

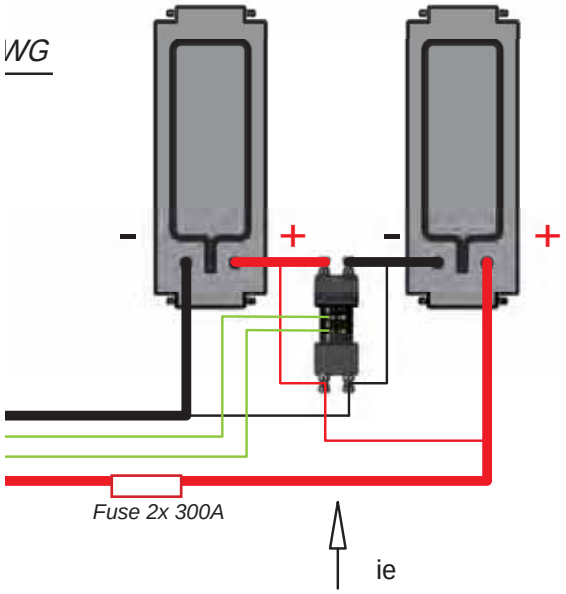


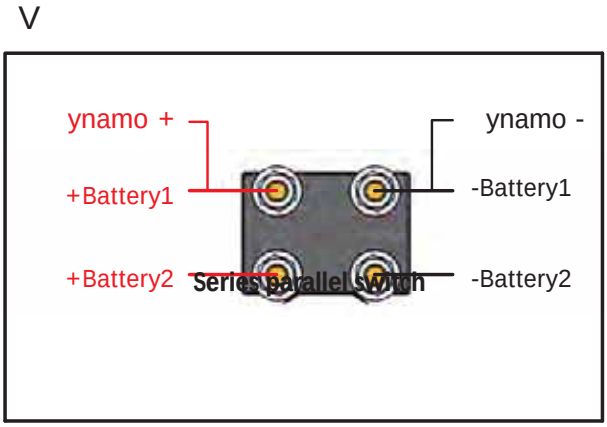
- **Connect battery + to free contact at contactor***

- **Connect battery - to A contact on E-motor.**

Contactor support on pump unit



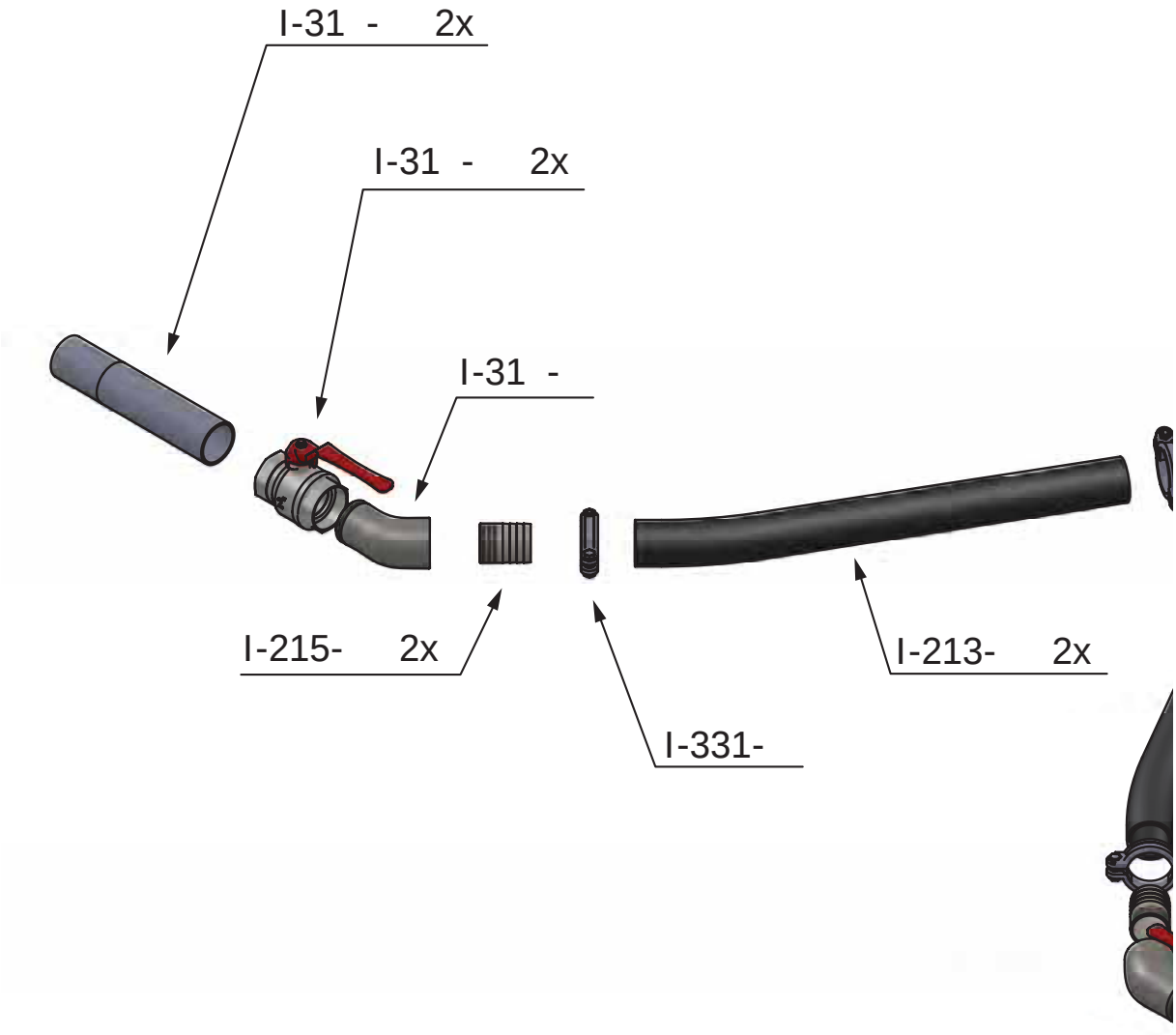


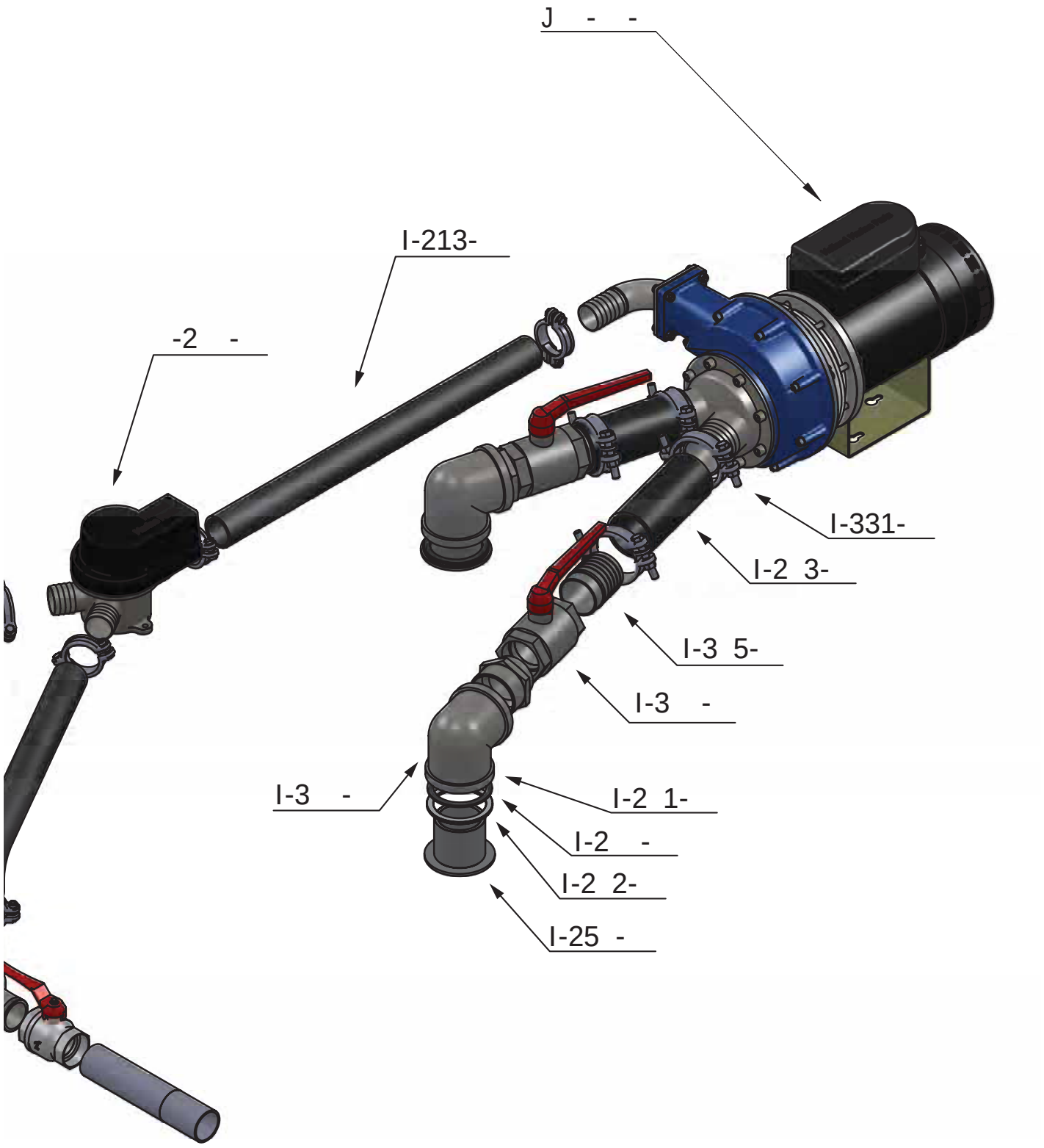


Appendix C, exploded View JT-90 Single

Pumpunit JT-90	JTS-90-00
3-Way valve	V-200-00

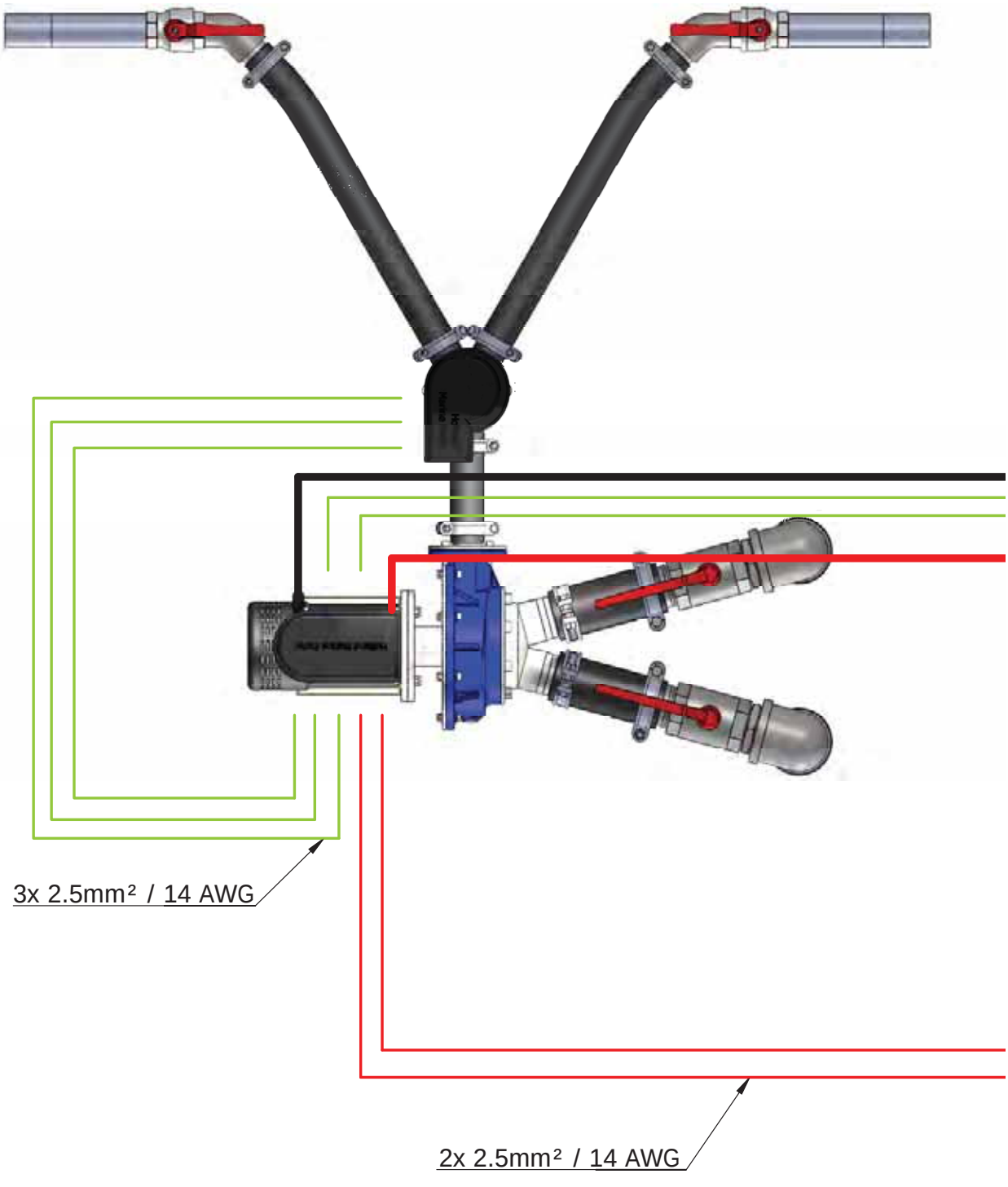
Water inlet	I-302-00	Hose clamp 77-94 mm	I-311-00
Ring 3”	I-303-00	Hose 3”/76 mm / L=1m/3.3ft	I-312-00
Nut 3”	I-304-00	Pressure hose 3” / 76 mm	I-213-00
Seal Rubber	I-306-00	Elbow 45^0 2” BSP M/F	I-316-00
Elbow 90^0 3” BSP	I-307-00	Hose connector 3”/76 mm / 2” BSP	I-215-00
Reducer 3” BSP/2,5” BSP	I-308-00	Ball valve 2” BSP	I-317-00
Ball valve 2,5” BSP	I-309-00	Nozzles	I-318-00
Hose connector 3” / 76 mm	I-310-00		




J - -
I-213-
-2 -
I-331-
I-2 3-
I-3 5-
I-3 -
I-3 -
I-2 1-
I-2 -
I-2 2-
I-25 -

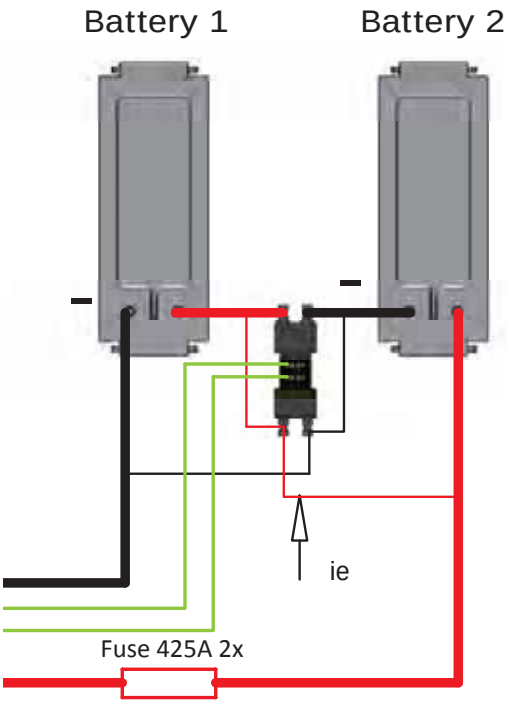
Appendix C-1, Electrical Installation 24V Series Parallel Switch, JT-90 Single

For correct installation of series parallel switch see page 68.

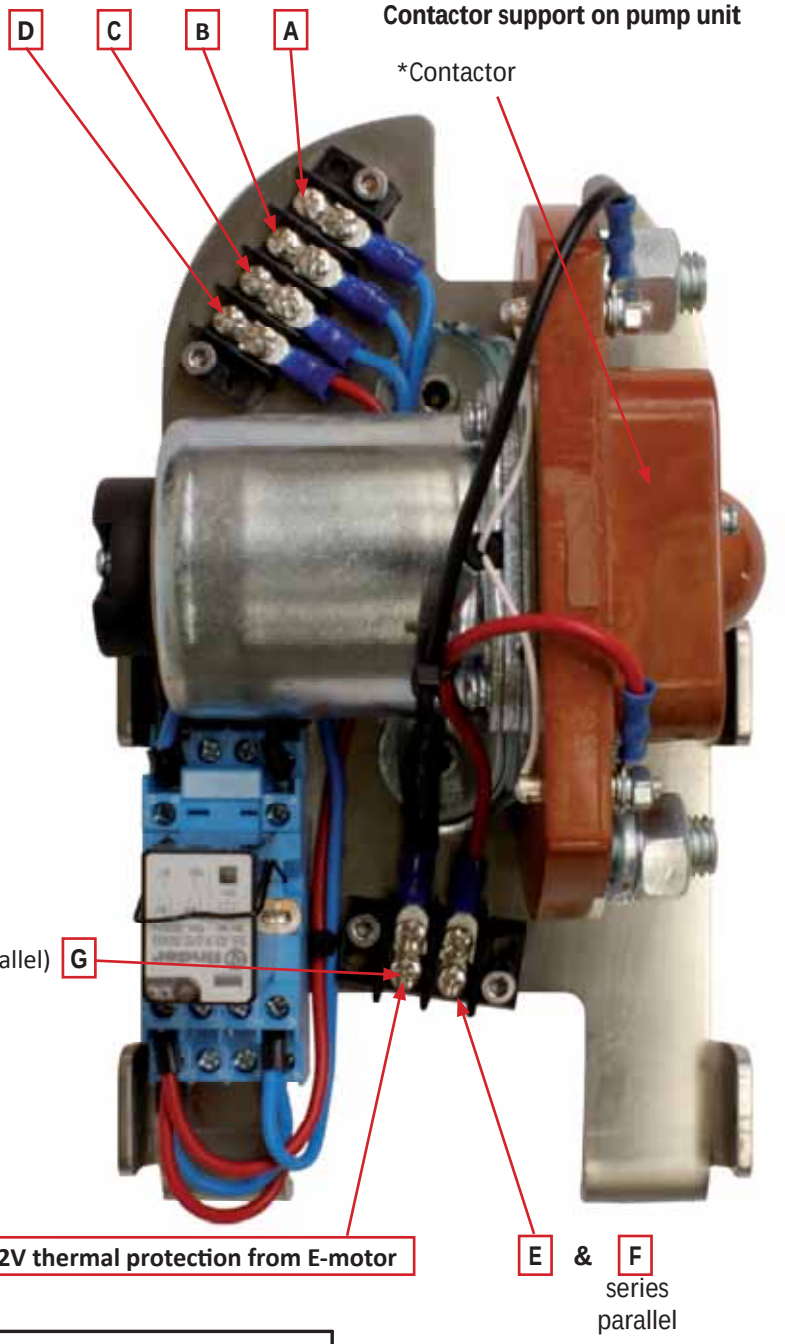


- **Connect battery + to free contact at contactor***

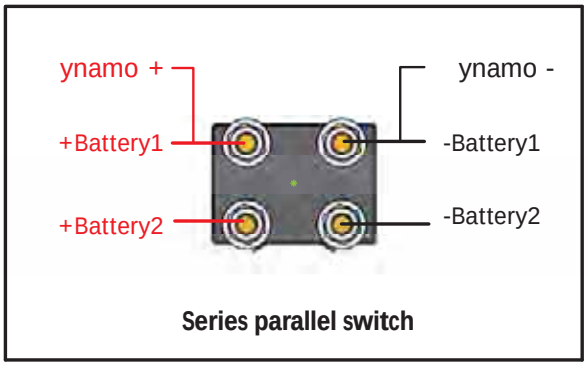
- **Connect battery - to A cable from E-motor.**



Contactor support on pump unit



V



Series parallel switch

Fuse 15A

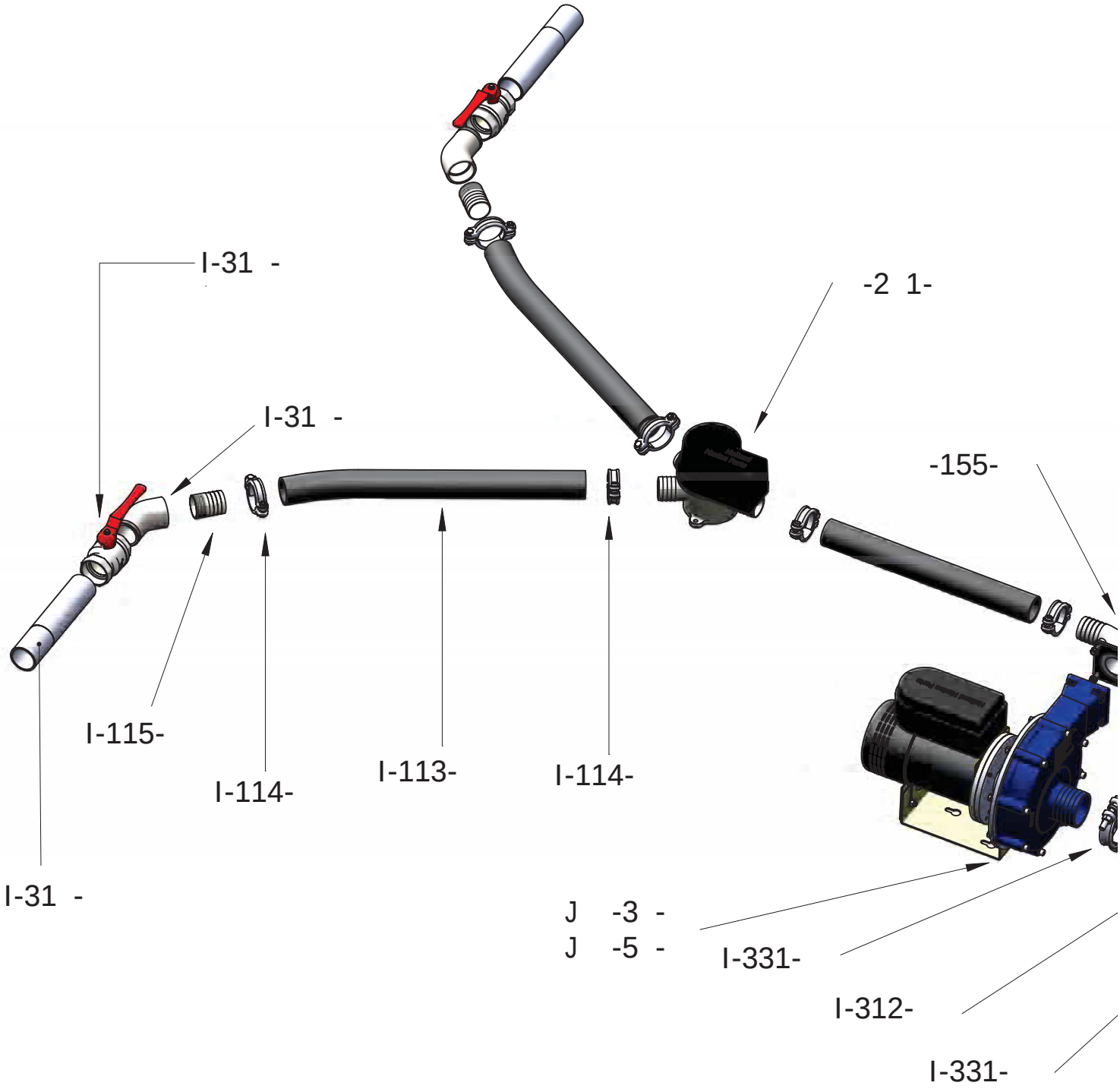
+ Ignition

- Ground

Joystick

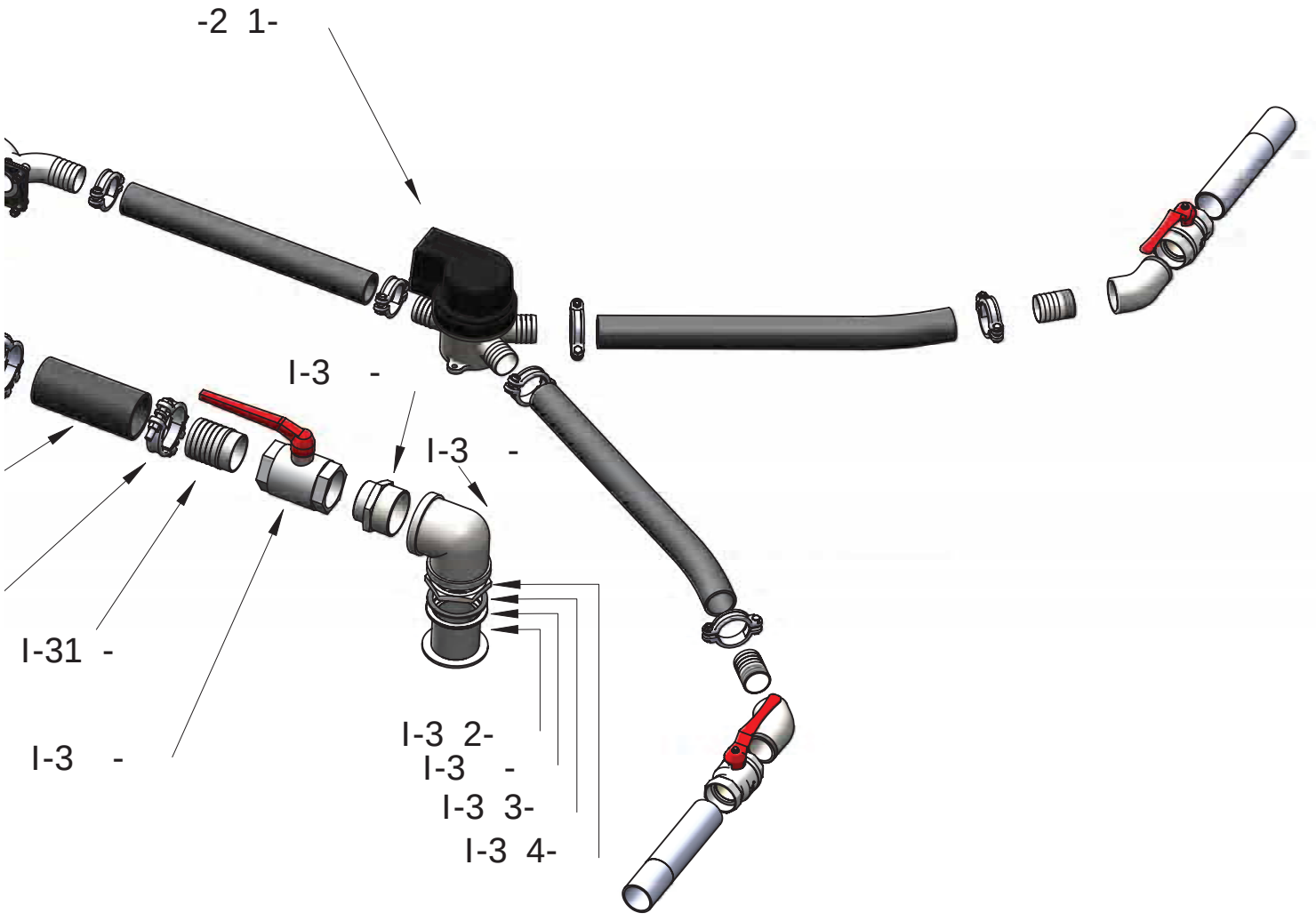
12V

Appendix D, exploded View JT-30 / JT-50 Combi

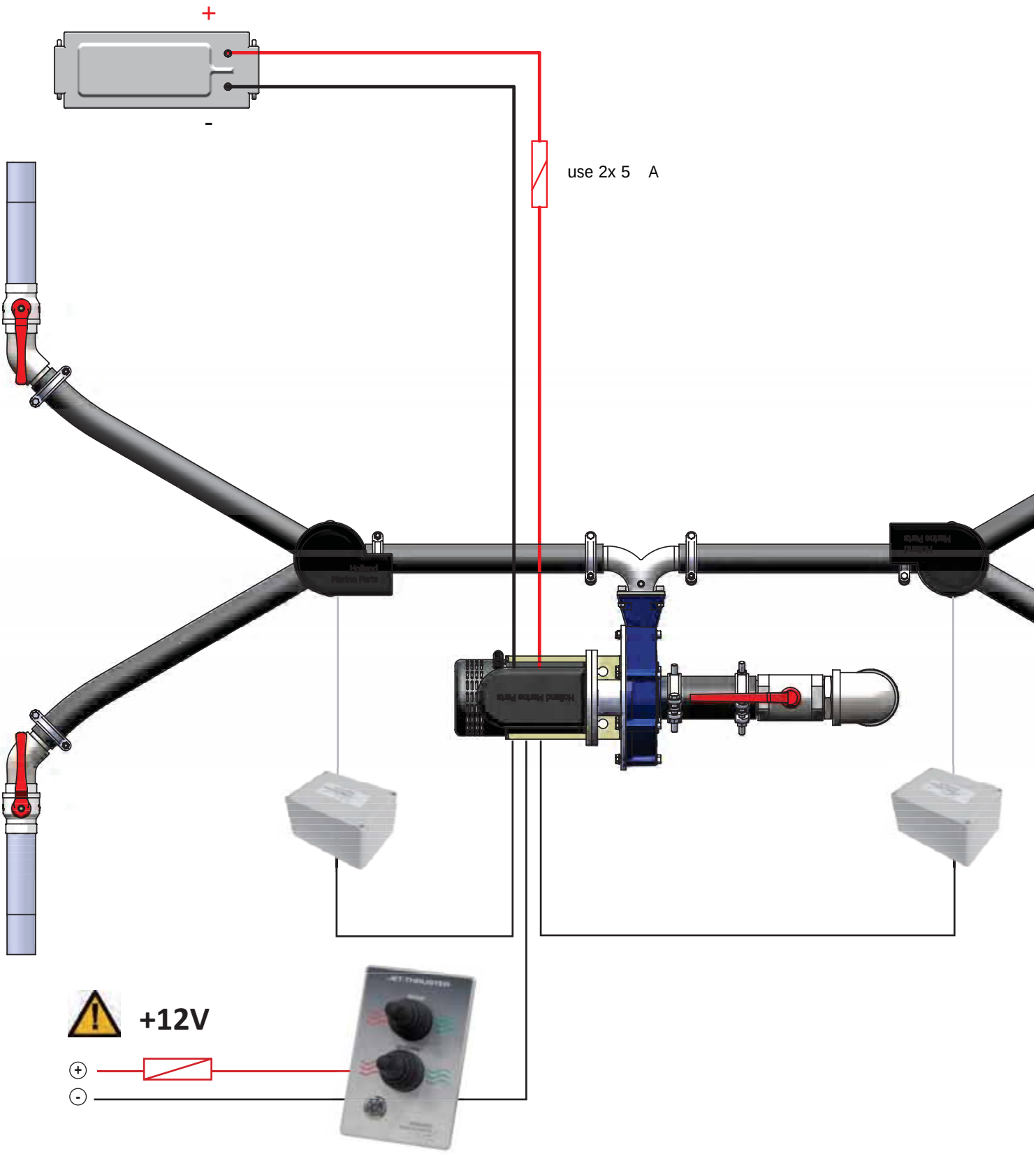


Pumpunit JT-30 / JT-50	JTS-30-00 / JTS-50-00
2-Way pump outlet	P-155-00
3-Way valve	V-201-00

Water inlet 3”	I-302-00	Hose clamp 77-94 mm	I-311-00
Ring 3”	I-303-00	Hose 3”/76 mm / L=1m/3.3ft	I-312-00
Nut 3”	I-304-00	Pressure hose 2” / 51 mm	I-113-00
Seal Rubber	I-306-00	Hose clamp 48-60 mm	I-114-00
Elbow 90^0 3” BSP	I-307-00	Elbow 45^0 2” BSP M/F	I-316-00
Reducer 3” BSP /2,5” BSP	I-308-00	Hose connector 2” / 51 mm	I-115-00
Ball valve 2,5” BSP	I-309-00	Ball valve 2” BSP	I-317-00
Hose connector 3” / 76 mm	I-310-00	Nozzles (steel)	I-318-00

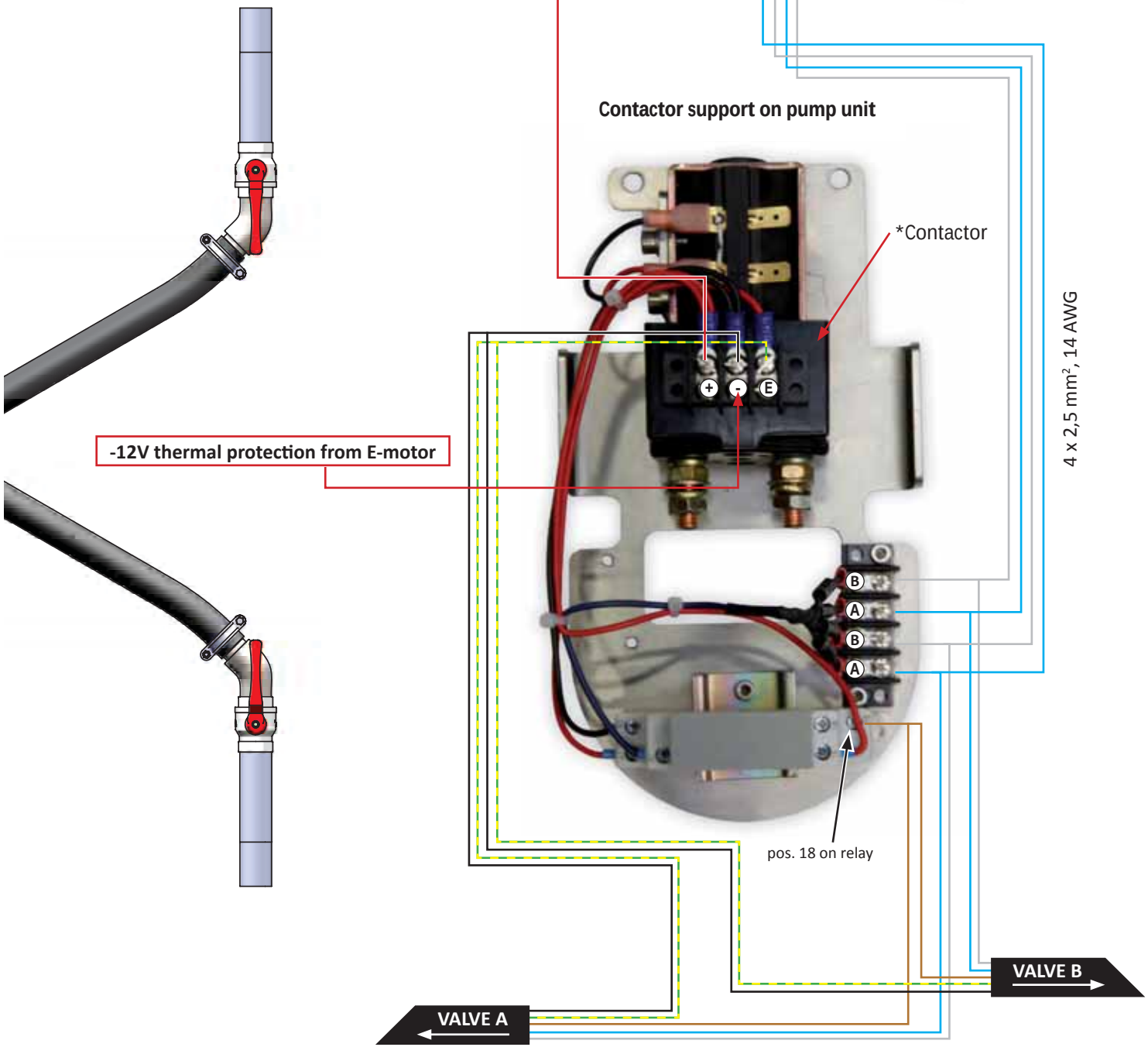


Appendix D-1, Electrical installation 12V, JT-30 Combi

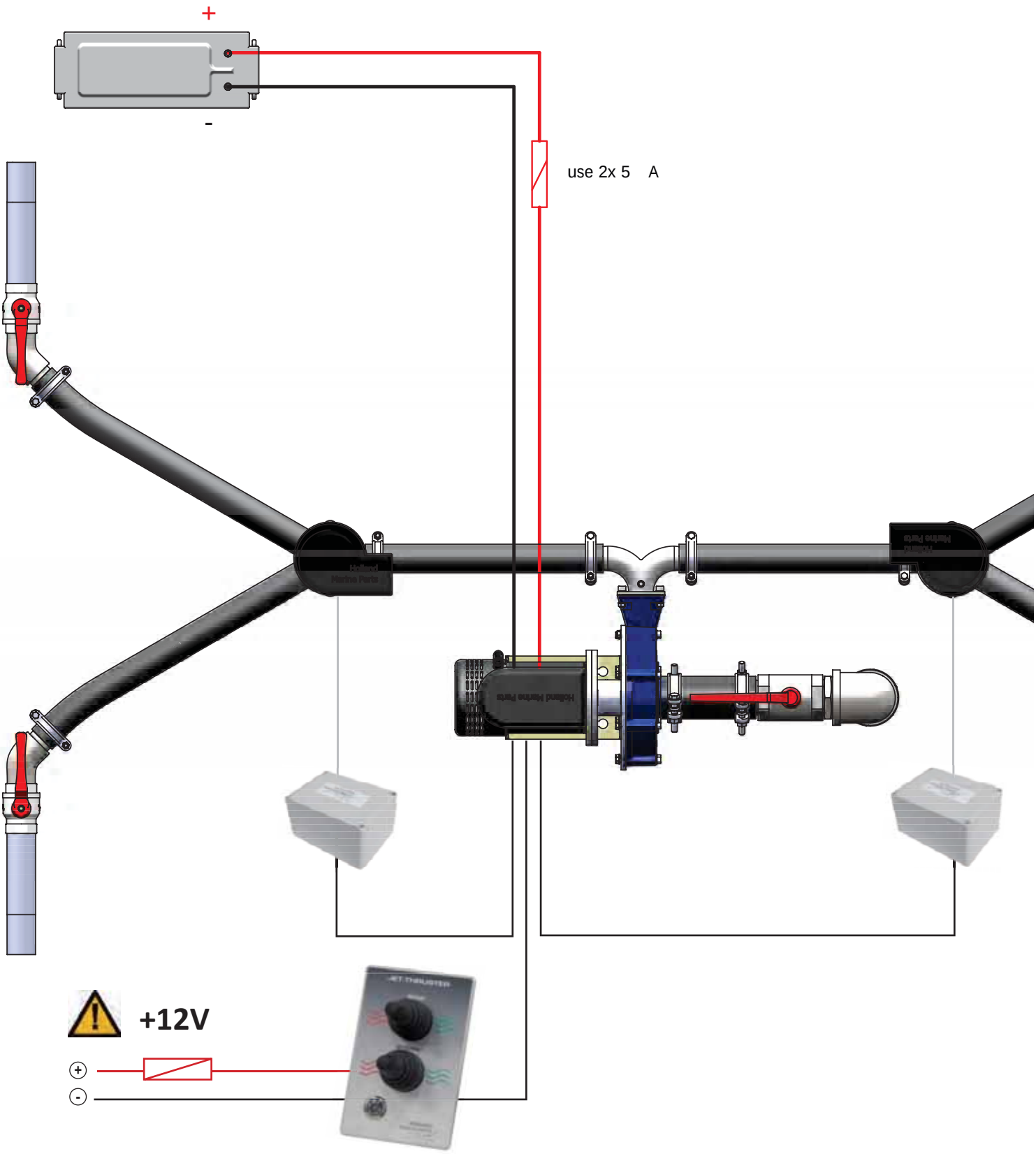


- Connect battery + to free contact at contactor*

- Connect battery - to **A** cable from E-motor.



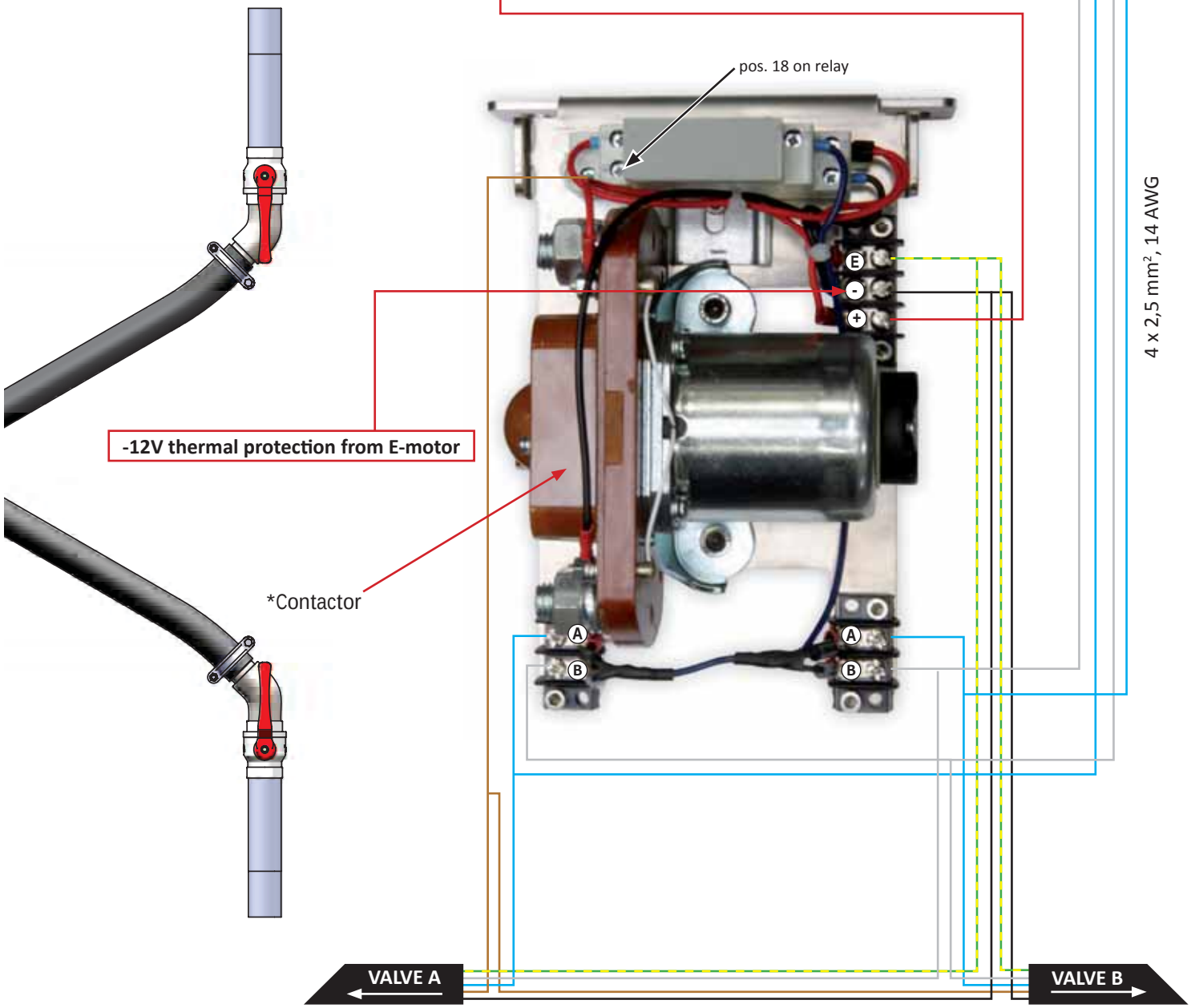
Appendix D-2, Electrical installation 12V, JT-50 Combi



Contactor support on pump unit

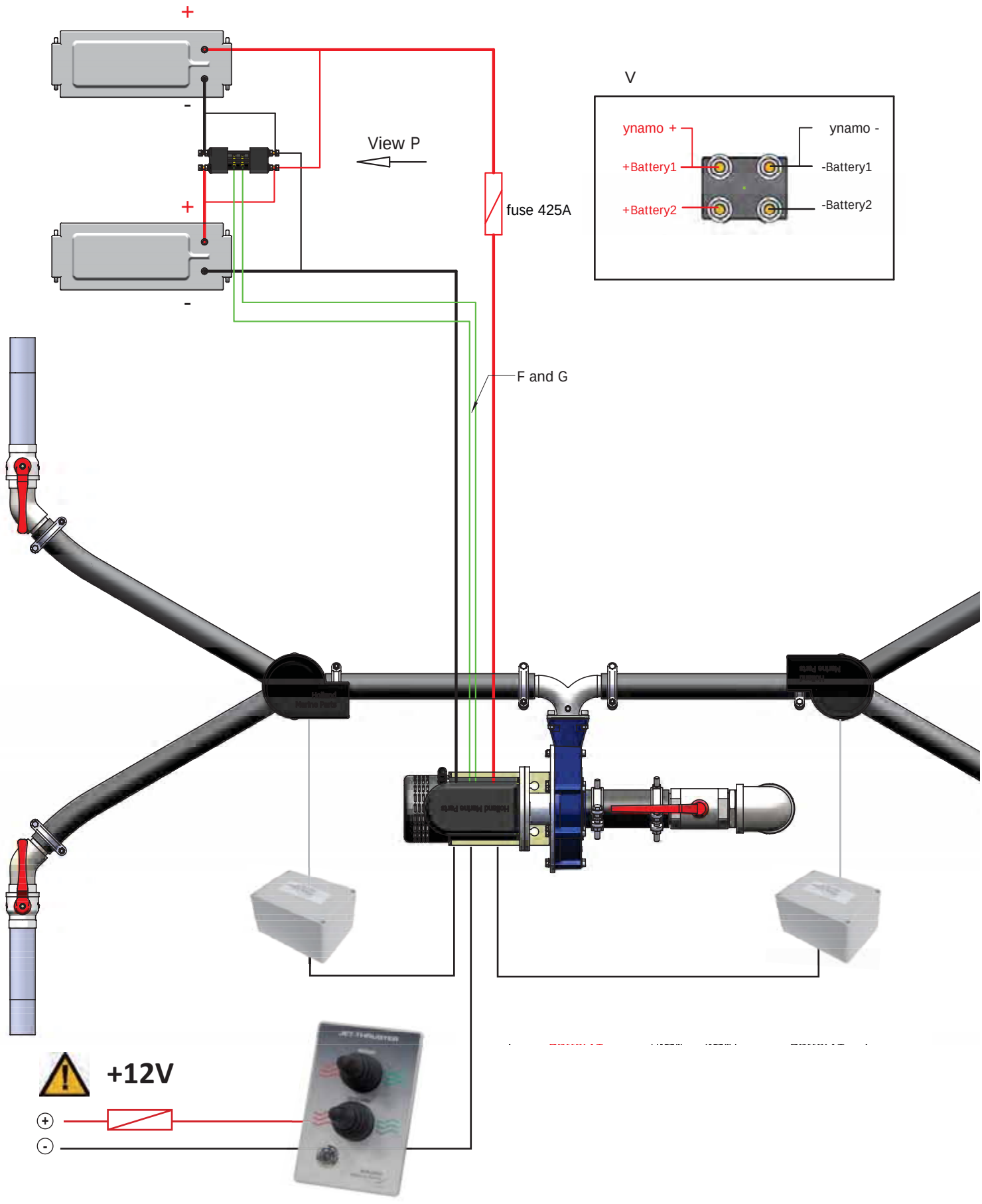
+12V

- **Connect battery + to free contact at contactor***
- **Connect battery - to A cable from E-motor.**



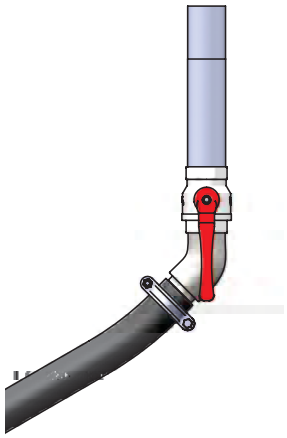
Appendix D-3, Electrical Installation 24V Series Parallel Switch, JT-50 Combi

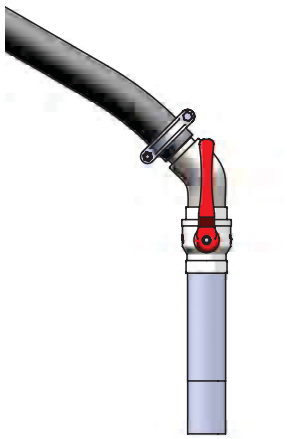
For correct installation of series parallel switch see page 68.

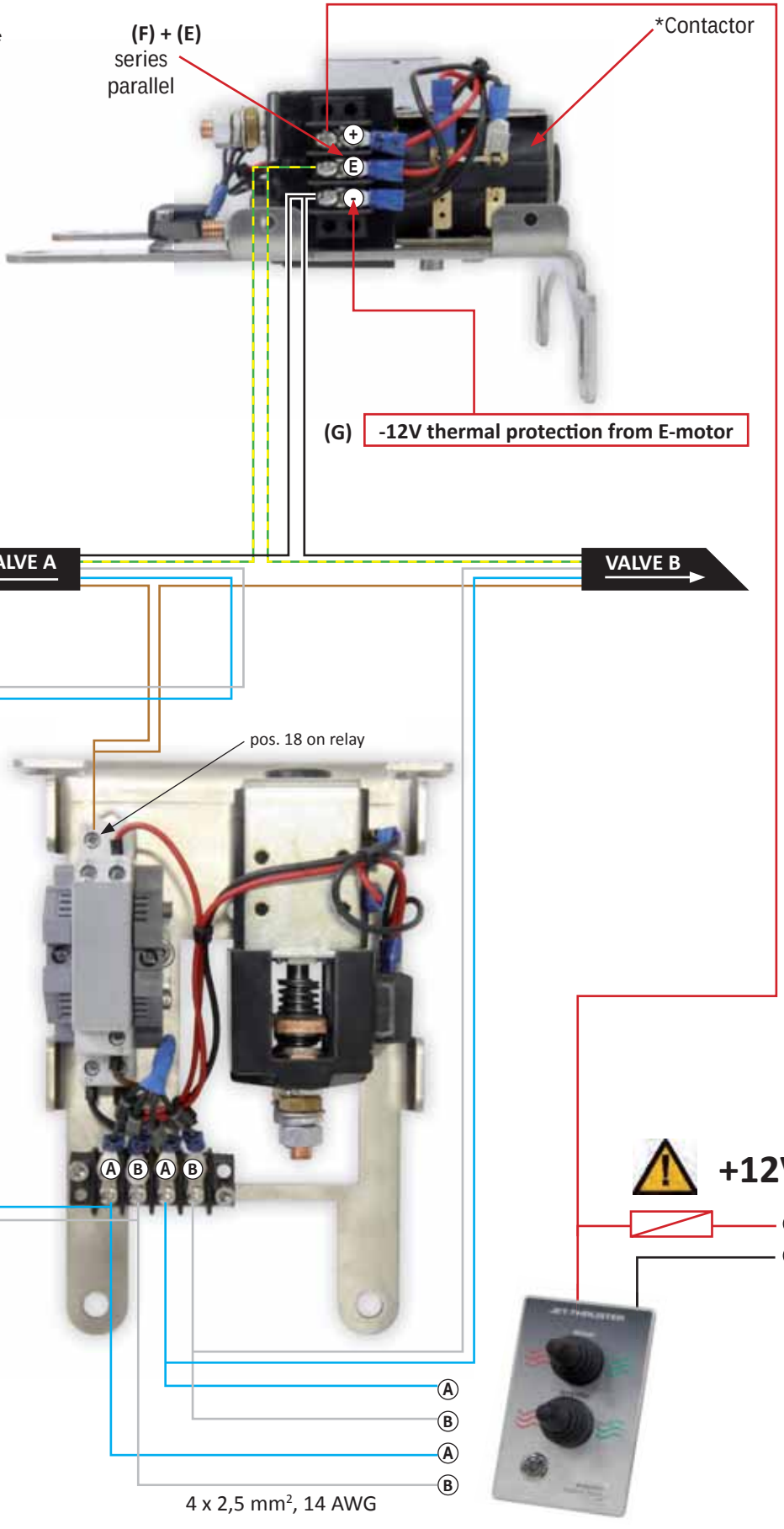


Contactor support on pump unit

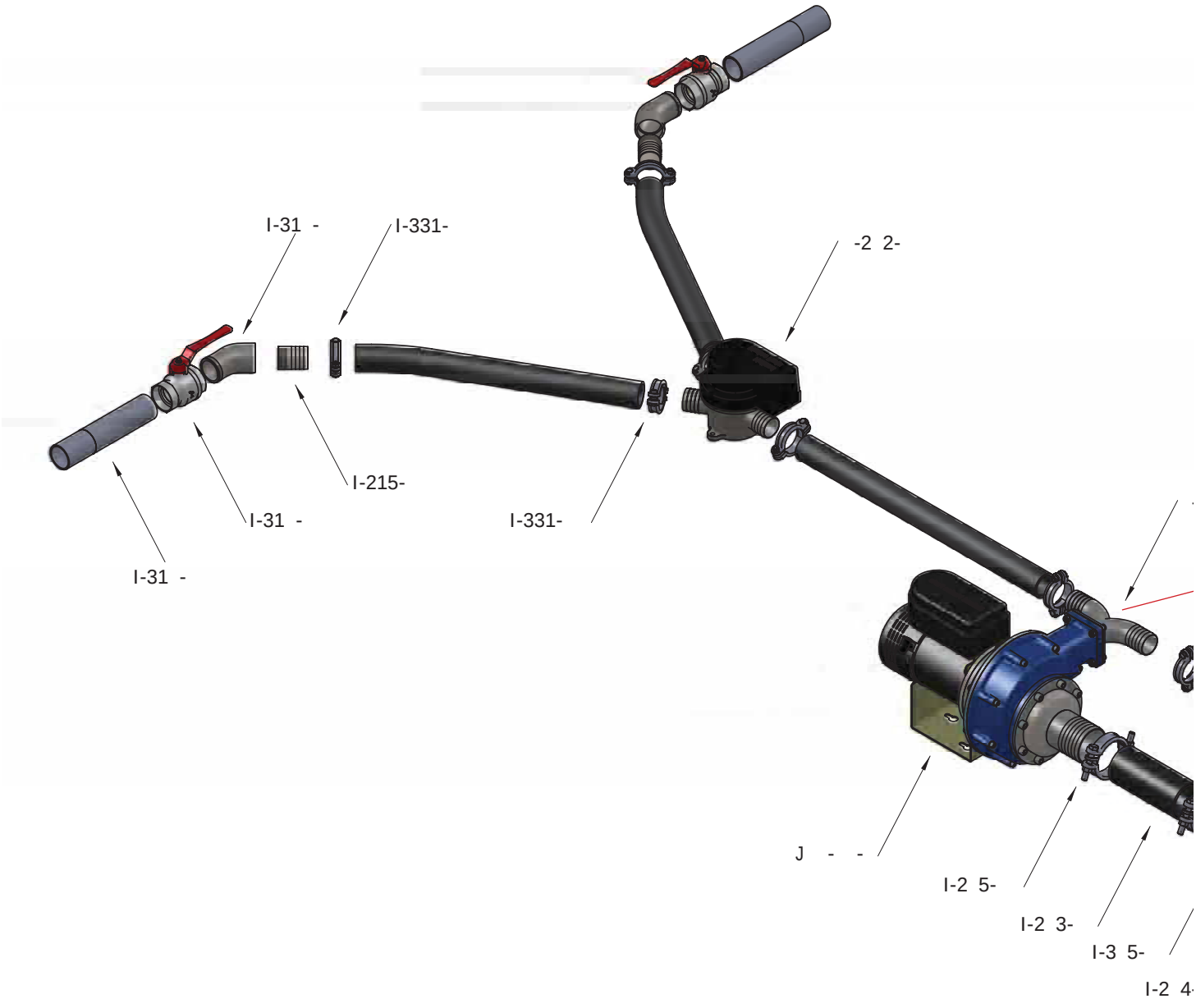
- **Connect battery + to free contact at contactor***
- **Connect battery - to A cable from E-motor.**





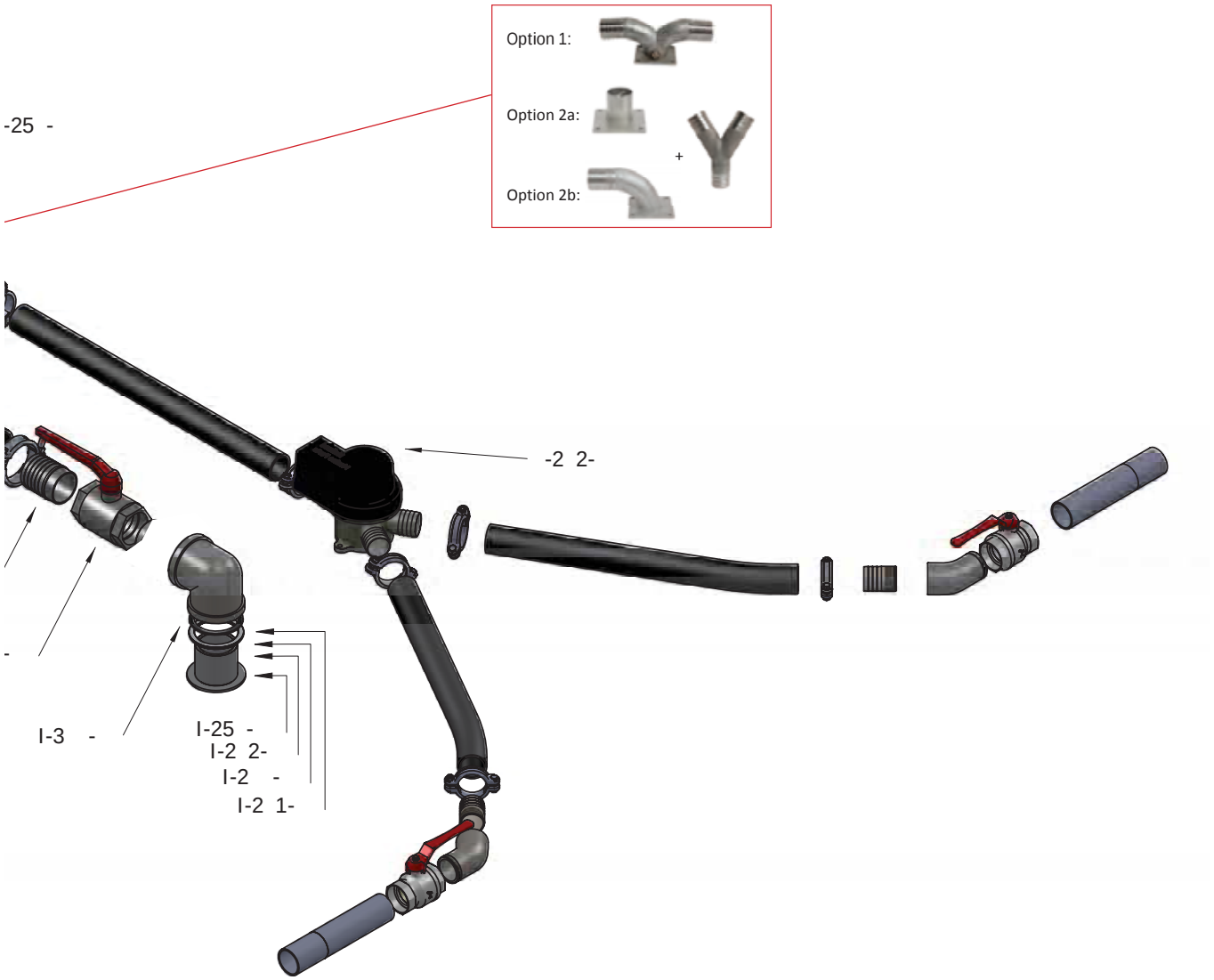


Appendix E, exploded View JT-70 Combi



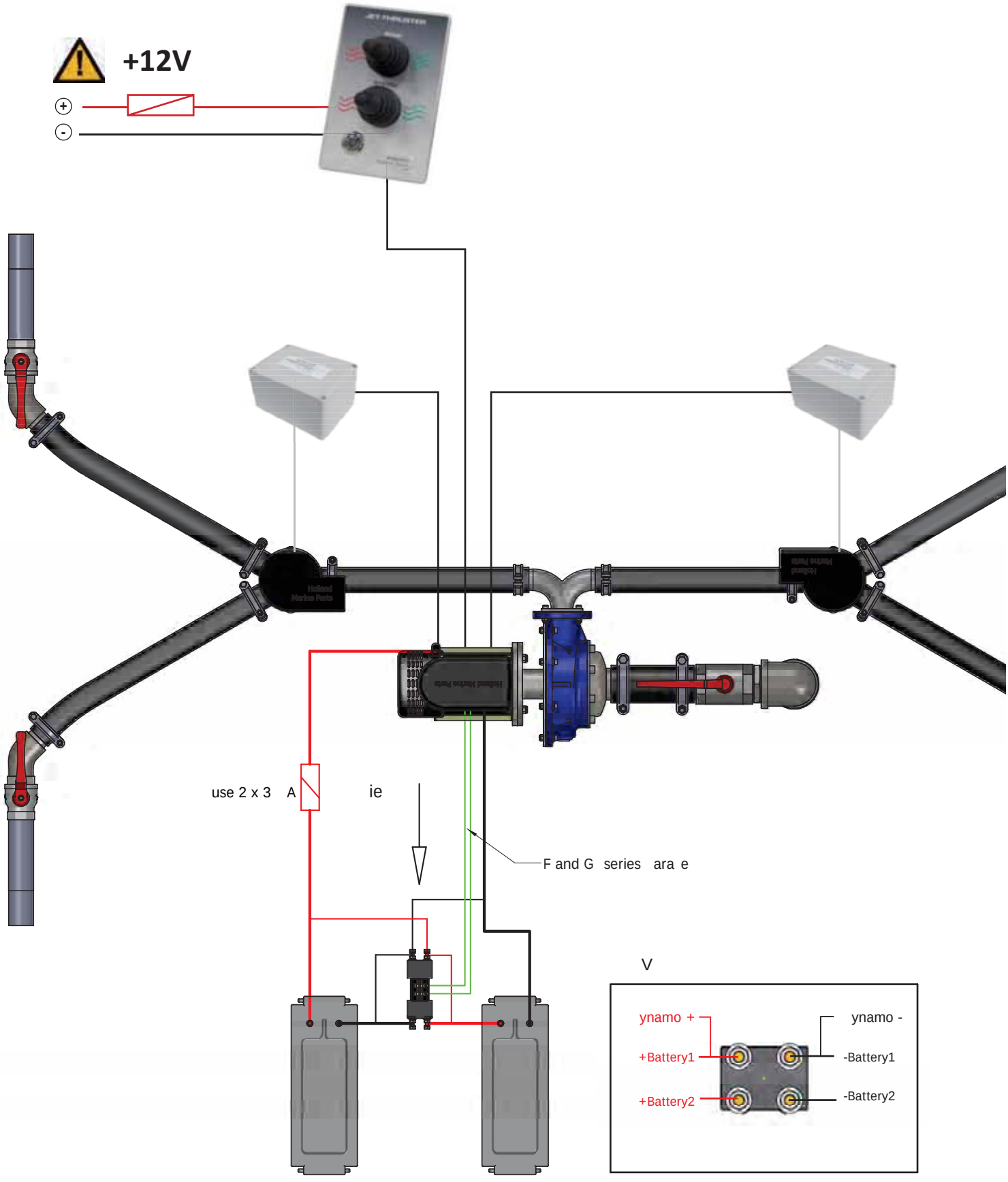
Pumpunit JT-70	JTC-70-00
2-Way pump outlet	P-259-02
3-Way valve	V-202-00

Water inlet 4”	I-259-00	Hose clamp 94-115 mm	I-265-00
Ring 4”	I-260-00	Hose 3½”/90 mm / L=1/3.3ft	I-263-00
Nut 4”	I-261-00	Pressure hose 3”/76 mm	I-213-00
Seal Rubber	I-262-00	Hose clamp 77-94 mm	I-331-00
Elbow 90^0 3” BSP	I-307-00	Elbow 45^0 2” BSP M/F	I-316-00
Ball valve 3” BSP	I-264-00	Hose connector 3”/76 mm / 2” BSP	I-215-00
Hose connector 3½”/90 mm	I-265-00	Ball valve 2” BSP	I-317-00
		Nozzles (steel)	I-318-00



Appendix E-1, Electrical Installation 24V Series Parallel Switch, JT-70 Combi

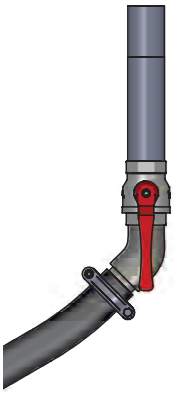
For correct installation of series parallel switch see page 68.

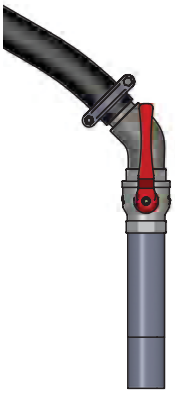


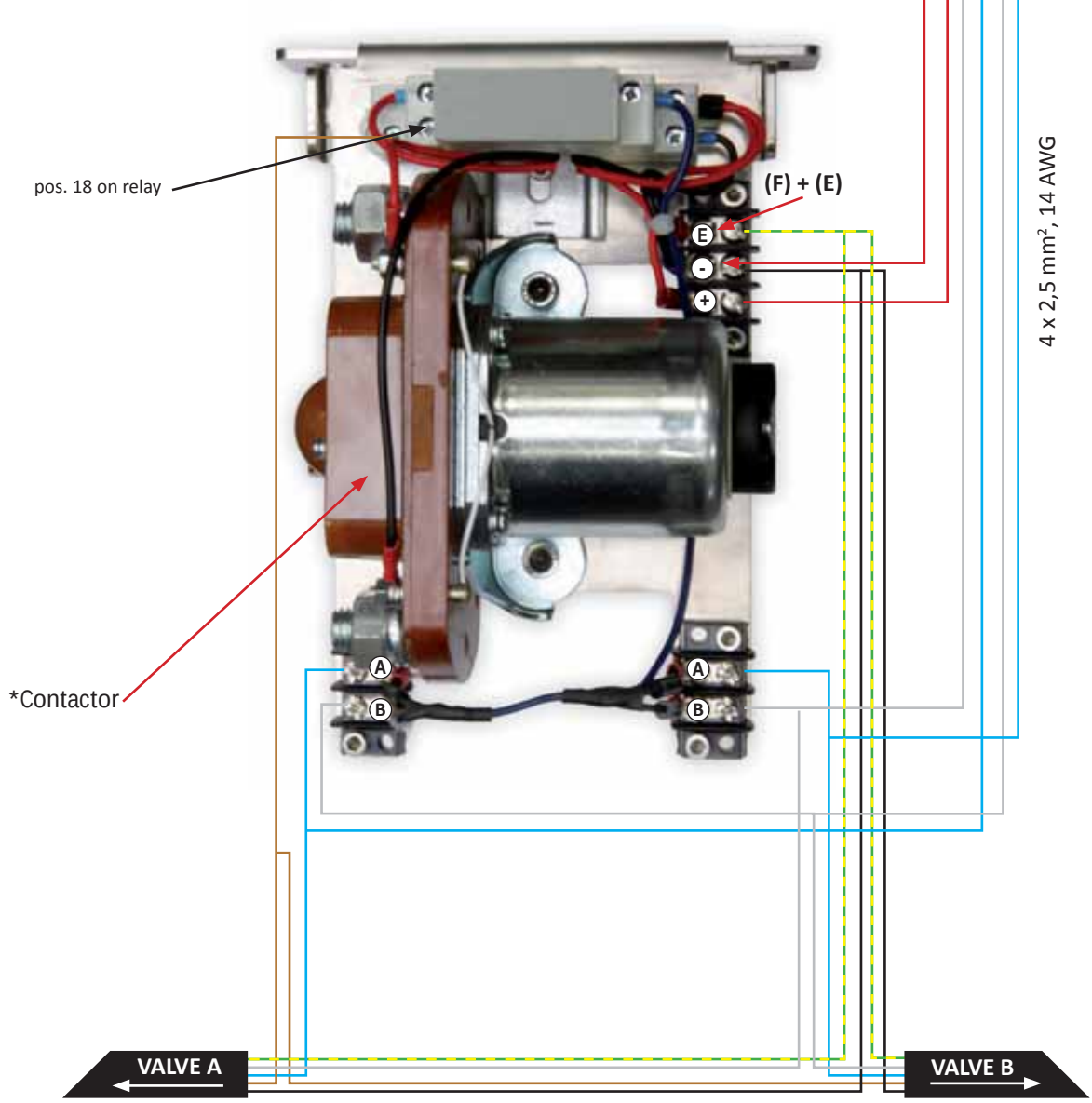
Contactor support on pump unit

+12V

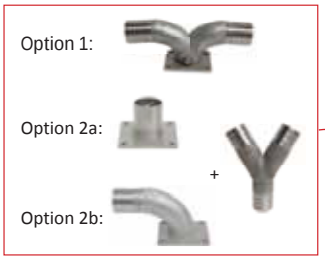
- **Connect battery + to free contact at contactor***
- **Connect battery - to A cable from E-motor.**

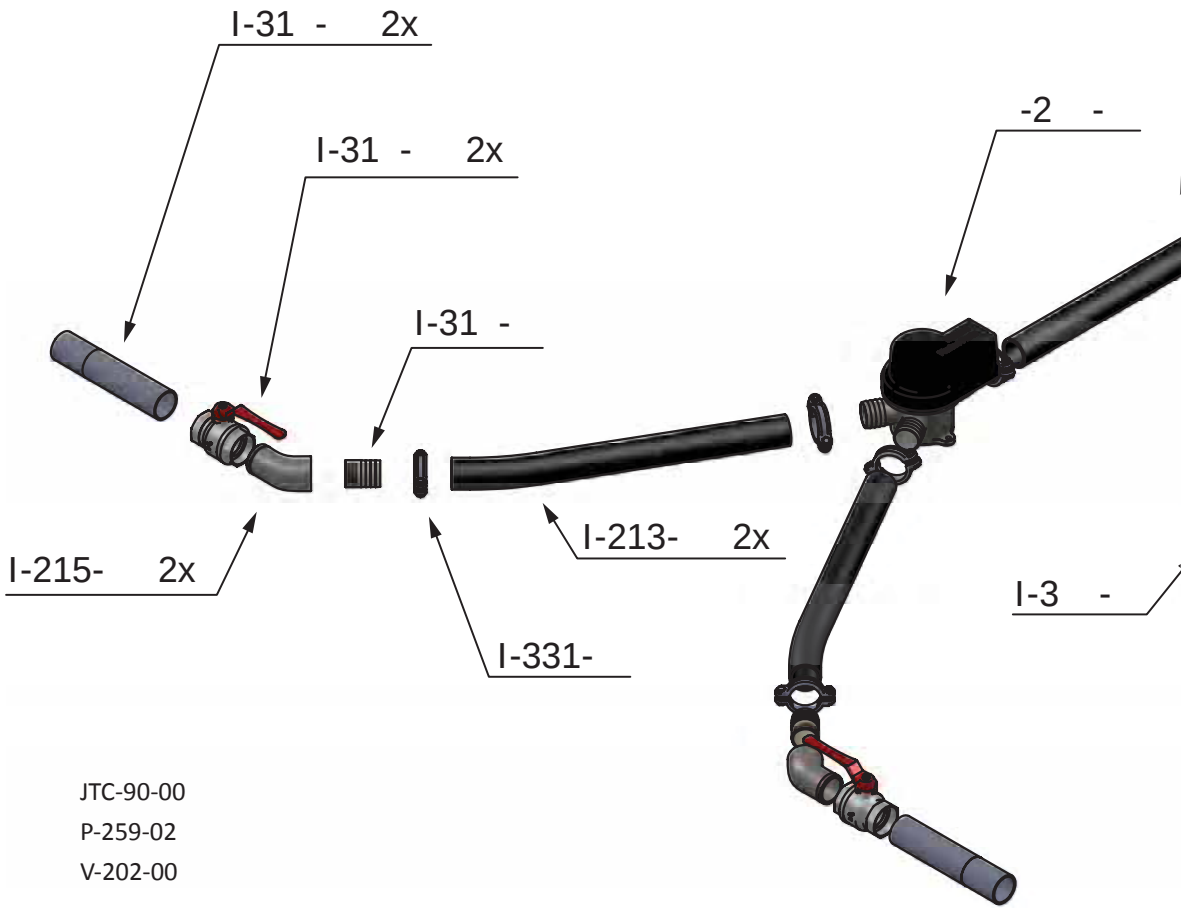






Appendix F, exploded View JT-90 Combi

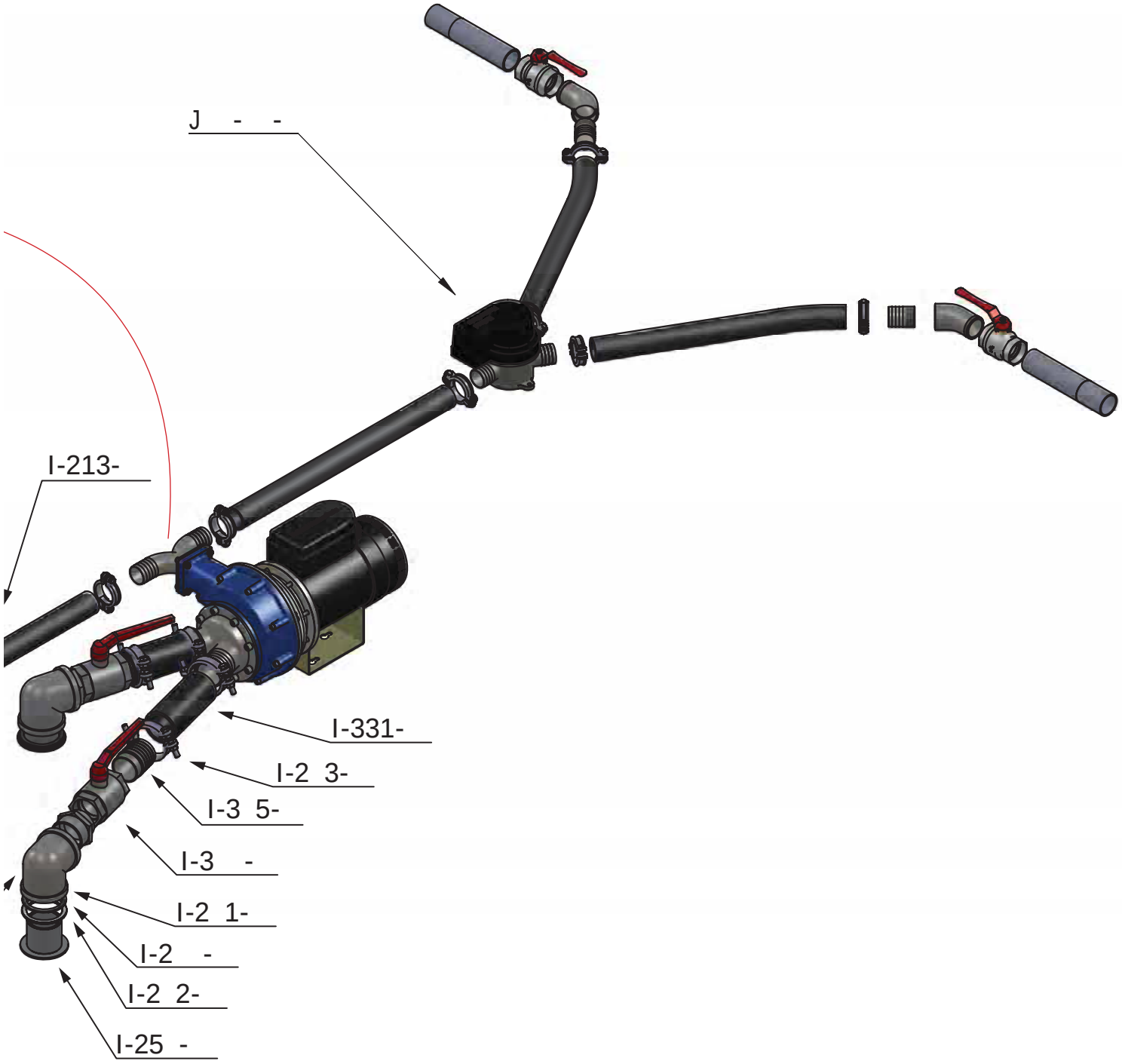




Pumpunit JT-90	JTC-90-00
2-Way pump outlet	P-259-02
3-Way valve	V-202-00

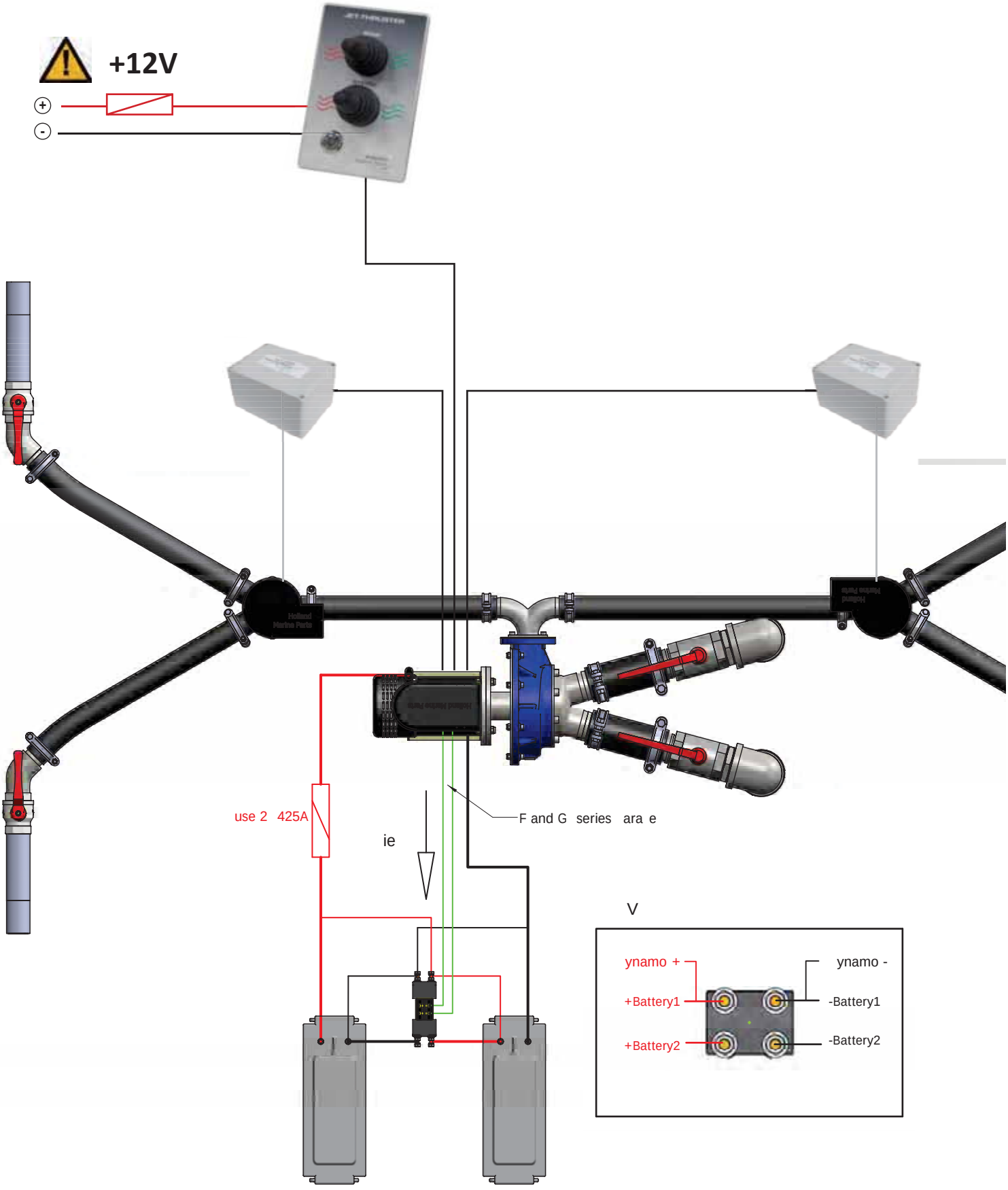
Water inlet 3”	I-302-00
Ring 3”	I-303-00
Nut 3”	I-304-00
Seal Rubber	I-306-00
Elbow 90^0 3” BSP	I-307-00
Reducer 3” BSP / 2,5” BSP	I-308-00
Ball valve 2,5” BSP	I-309-00
Hose connector 3”/76 mm	I-310-00

Hose clamp 77-94 mm	I-331-00
Hose 3”/76 mm / L=1m/3.3ft	I-312-00
Pressure hose 3” / 76 mm	I-213-00
Elbow 45^0 2” BSP M/F	I-316-00
Hose connector 3”/76 mm / 2” BSP	I-215-00
Ball valve 2” BSP	I-317-00
Nozzles (steel)	I-318-00


J - -
I-213-
I-331-
I-2 3-
I-3 5-
I-3 -
I-2 1-
I-2 -
I-2 2-
I-25 -

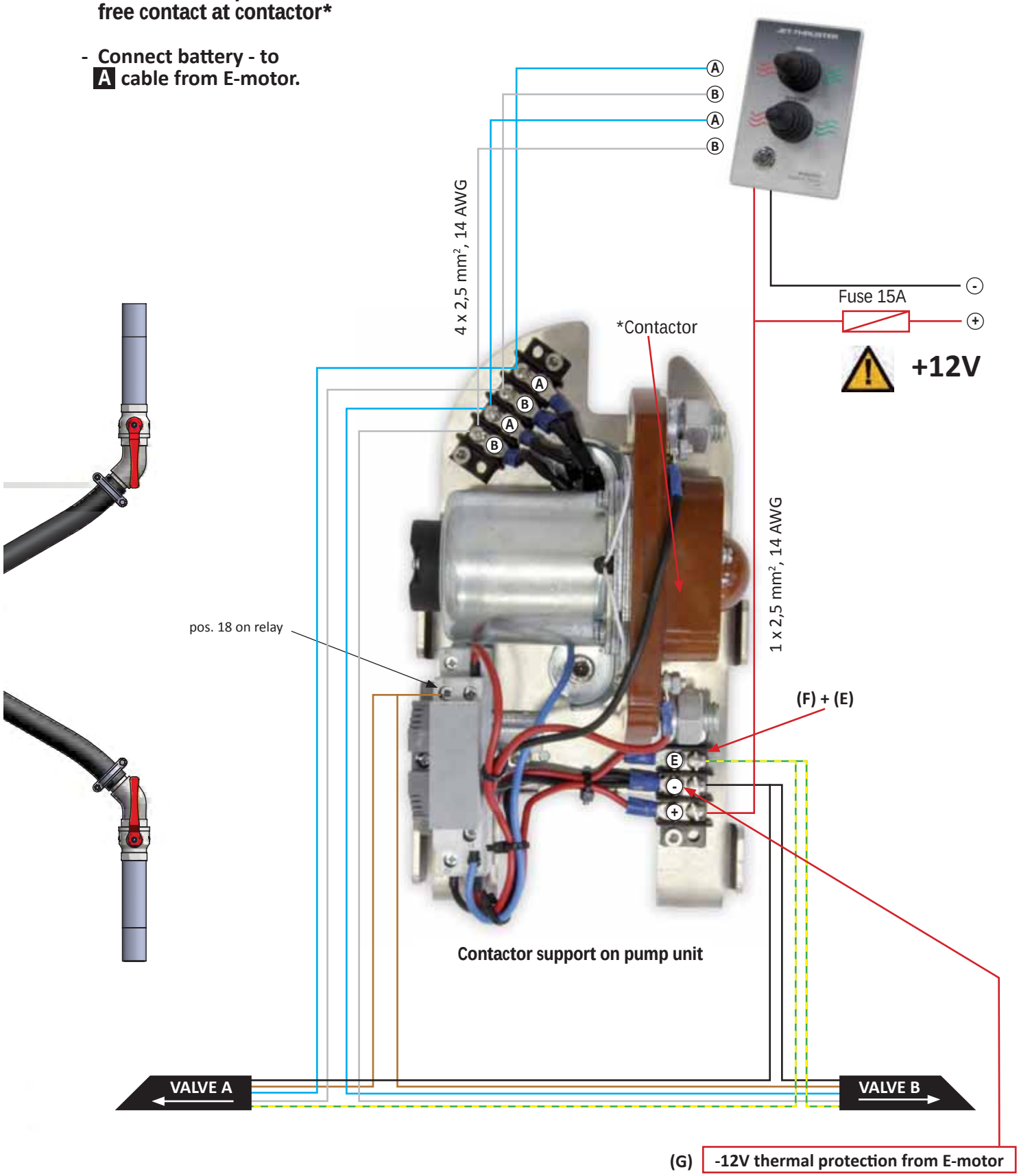
Appendix F-1, Electrical Installation 24V Series Parallel Switch, JT-90 Combi

For correct installation of series parallel switch see page 68.



- **Connect battery + to free contact at contactor***

- **Connect battery - to A cable from E-motor.**



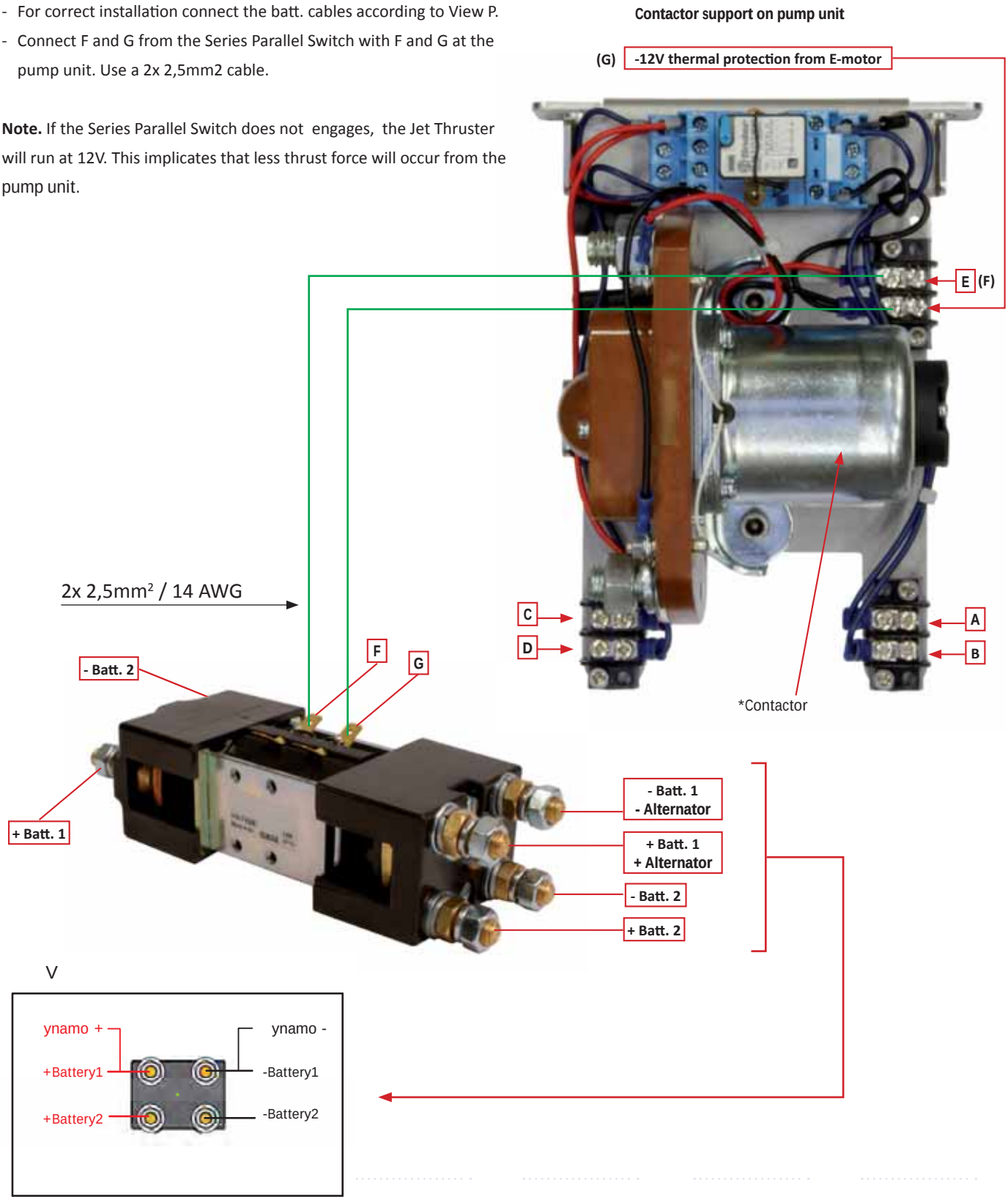
Series - parallel switch

The Series Parallel Switch creates a temporary 24V environment out of two 12V batteries to power the E-motor from the pump unit.

The switch itself operates at 12V. The moment the Jet Thruster system activates, 12V power activates the coil that makes the switch connects the battery cables. Automatically the connection will break if the Jet Thruster stops running.

- For correct installation connect the batt. cables according to View P.
- Connect F and G from the Series Parallel Switch with F and G at the pump unit. Use a 2x 2,5mm2 cable.

Note. If the Series Parallel Switch does not engages, the Jet Thruster will run at 12V. This implicates that less thrust force will occur from the pump unit.



Jet Thruster valve test rapport

3- way valve

serial number

V-100-00: ❑

V-200-00: ❑

V-101-00: ❑

V-202-00: ❑

Jet Thruster test rapport

Testdate:

HMP No:

JTS-30-00: ❑ JTC-30-00: ❑

JTS-50-00: ❑ JTC-50-00: ❑

JTS-70-00: ❑ JTC-70-00: ❑

JTS-90-00: ❑ JTC-90-00: ❑

OK:

Name :

Signature:

❑

JT-30 / JT-50

pos. 1

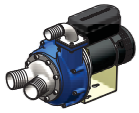
Serial No:

❑

JT-30 / JT-50

pos. 2

Serial No:



❑

JT-70 / JT-90

pos. 1

Serial No:

❑

JT-70 / JT-90

pos. 2

Serial No:

Notes

Project info

Owner: .....

Adress: .....

Boat type: .....

Build by: .....

CIN code: .....

Date of installation: .....

Date of system activation: .....

.....

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.....

.....

.....

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Date OK: Name : Signature / stamp:

....

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